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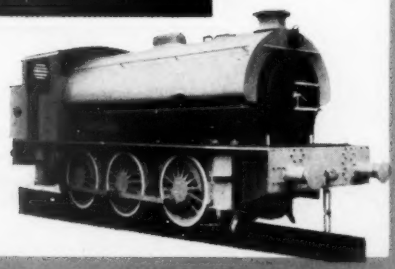

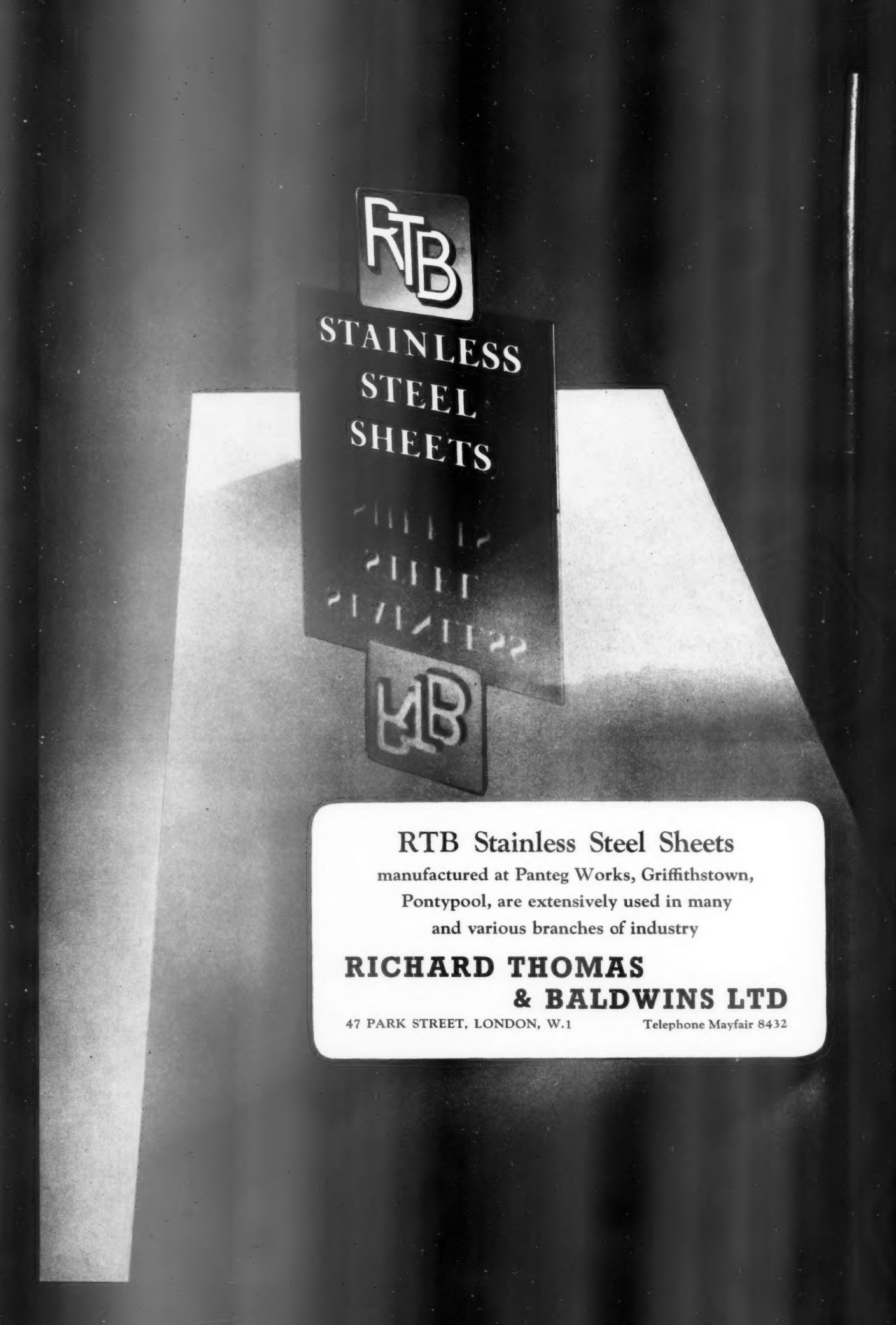

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More Main-Line Diesels

THE British Transport Commission, evidently well satisfied with the design for its Type "B" mixed-traffic diesel locomotives of 1,000-1,250 h.p., has not waited for extensive trials of the prototypes ordered at the end of 1955 before placing contracts for further diesel-electric locomotives of the class. There could be no better sign of the determination of the Commission to make all possible progress with the modernisation of motive power for British Railways. As reported in our Contracts and Tenders columns in this issue, 46 further locomotives have been ordered, 28 from the North British Locomotive Co. Ltd., for work in the Eastern Region, and 18 from the Birmingham Railway Carriage & Wagon Co. Ltd. for work in the Scottish Region. In the original batch of orders in 1955, the Birmingham Railway Carriage & Wagon Co. Ltd. was made responsible for 20 of these locomotives, all for the Eastern Region, with Sulzer engines and Crompton Parkinson transmission equipment. North British received orders for 10 locomotives for the Eastern Region with M.A.N. engines and General Electric transmission equipment, and similar engines and transmissions will be used for the new order. The control equipment is designed to provide automatic transitions between full-field and weak-field in both directions on any power notch, ensuring the most effective use of engine power over a wide range of track speeds. The 18 Birmingham Railway Carriage & Wagon locomotives are the first of the main-line diesels to be earmarked for the Scottish Region, the original orders having been divided between the London Midland, Western, and Eastern Regions. Some large orders for wagons and brake-vans are also announced, supplementing those reported in our issue of May 31. These include 300 20-ton bulk cement wagons and 400 30-ton bogie bolster wagons from Metropolitan-Cammell, 1,200 12-ton covered goods vans and 100 20-ton bulk grain vans from Charles Roberts, 21 38-ton rectank wagons from the Butterley Co. Ltd., and 75 gangway standard brake vans from the Pressed Steel Co. Ltd. Pressed Steel now has orders from the Commission for nearly 10,000 wagons to meet the 1957-58 programme and increased use of containers seems to be foreshadowed by the fact that 5,550 of the wagons being built are 12-ton flat container wagons.

Railway Travel Exhibition

ALTHOUGH great progress already has been made with the modernisation of British Railways, much of the visual evidence of this, particularly the growing fleet of diesel multiple-unit sets, is, in general, only to be seen outside the London area. The public is inclined to believe only what it sees, and the decision of the British Transport Commission to stage an exhibition of its latest passenger coaches and diesel locomotives at Battersea Wharf Goods Depot at the end of this month is sensible and right. It is to be opened on June 28 by Mr. Harold Watkinson, Minister of Transport & Civil Aviation, who will no doubt find a personal pleasure in throwing open to public inspection this evidence of the railway progress in which he has taken so keen an interest. The public will be admitted free from 4 p.m. on the opening day, from 10 a.m. to 9 p.m. on June 29, and from 2 p.m. to 9 p.m. on June 30. Among the exhibits are likely to be the 1,000-h.p. English Electric-Vulcan diesel-electric locomotive described in our issue of June 7, the English Electric 3,300-h.p. Co-Co Deltic diesel-electric locomotive, a multiple-unit diesel train by Wickham, coaches by Birmingham Railway Carriage & Wagon, Craven, Gloucester, Metro-Cammell, and built in British Railways works, waiting-room and office furniture, automatic ticket-issuing machines, and many other items.

Dollars for Travel

AMONG passengers by train in Canada, the U.S.A., and even perhaps Mexico may shortly be seen rather more of that very rare species, the British traveller in North America whose journey is made for pleasure. Visitors from this country on business tend, so as to save time and their severely restricted dollar allowance, to go by air over the longer distances in Canada and the U.S.A., though a good many of them travel by train between the more closely spaced business centres in the eastern regions. The extension by the British Government of the £100 ordinary travel allowance to the dollar area, with, it is understood, the same regulations as apply to travel in Europe, will mean that the cost of crossing the Atlantic by sea or air, and the railway fare, with sleeping accommodation, by the direct route to and from the final destination in North America, will not count against the £100. Given the comfort of long-distance train travel, the interest of the journey, and the magnificent scenery traversed, the concession offers the bare possibility—but little more, in view of the cost of meals en route—of a trip to Vancouver, say, or Los Angeles. Meanwhile, British travel agencies are arranging inclusive tours, not over long distances, which involve some railway travel in North America.

Higher Restaurant Car Prices

THE augmentation from next Monday by the British Transport Hotels & Catering Services of the luncheon and tea meals—with prices increased from 8s. 6d. to

9s. 6d. and from 2s. 6d. to 3s. respectively—in British Railways trains offering full restaurant car service, is intended to raise the standard of meals and service. Some details are given on page 684. The new charges are considered by the management to compare favourably with those in hotels and other catering establishments offering comparable meals. Restaurant car meals in this country vary greatly, depending not only on what may be supplied to the car before the start of its journey, but also on the conductor and the other members of the crew. At their best, they can be very good indeed, and 9s. 6d., in the light of the prices prevailing in the catering trade, would not be excessive for a four-course luncheon cooked and served as in not a few British Railways expresses. How the travelling public will react to paying more is another matter.

Pennsylvania Passenger Policy

SOME problems of passenger train operation are discussed in the report of the Pennsylvania Railroad Company for 1956—problems which affect most railways in the U.S.A. and especially those which, like the Pennsylvania, operate a relatively large passenger service. Even though some of its passenger trains make a profit, the Pennsylvania, which carried 62,476,136 passengers last year, suffered a deficit of some $55,000,000 on these operations when all charges are taken into account. Nevertheless the railway emphasises that it does not want to dispense with its passenger business, except in areas where there is no prospect of the service paying its way, or where airways or arterial roads have taken most of the traffic. The management wishes to continue Pullman services, but on a remunerative basis, and to retain and encourage residential traffic, which it regards as an essential to the welfare of the communities served. At present there is no prospect of such "commuter" services paying their way, and the Pennsylvania believes the solution is some form of Government or municipal aid, and some relief from taxation; this must be accompanied by some adjustment of services to the market, which will involve fares which pay the cost of service, withdrawal of services for which demand is inadequate, or where financial assistance is not forthcoming, and development of lightweight trains to reduce costs.

Indian Railway Bridges

THE large number of big bridges and, in a lesser degree, the number of bridges and culverts of all sizes, varying from pipe drains to spans several hundred feet in length are a special feature of Indian railways. Consequently, a recent talk entitled "Railway Bridges" by Mr. P. C. Neogi, Chief Engineer of the South Eastern Railway, was particularly apposite. He was addressing railway officers from all over India during a recent "railway week." In his talk he made a comprehensive survey of Indian bridge design and construction including considerations of drainage area, discharge and waterway, soil and streambed, foundations, protection and guiding works, loads and working stresses, materials, erection, inspection and maintenance. He also pointed out that as most of the Indian railway system was built up before 1900, many of its bridge superstructures were constructed of wrought iron or to early steel designs, and are now either suffering from fatigue or have become too weak to sustain present-day traffic loadings.

Testing and Repairs

THE practice in India, therefore, is for camber and alignment to be checked, and for samples of the material to be cut and tested for physical and chemical properties, to ascertain whether strengthening or replacement is necessary. Stresses in the masonry and foundations are also analysed in case rebuilding may be advisable. To allow for replacement or reconstruction, traffic may be diverted or the work may be carried out under traffic with all its complications. Inspection and routine and light repairs are the responsibility of the District Engineer, but regirdering and major reconstruction works, tecnnical inspection, testing, and the guidance of the District Engineer in major problems or repairs are duties of the Bridge Department. Moreover, the Central Standards Office under the Railway Board guides the standards of design, procedure, and technical policy. Also, a Bridge Standards Committee composed of the Bridge Engineers of the various railways meets annually to exchange ideas, resolve common problems, and report to the Railway Board. The talk closed with a statement showing the increase in cost of bridge construction work between 1898 and 1957.

Asking Passengers' Advice on Train Services

MANY railway managements have sought the advice of regular travellers and others on ways of improving passenger services; we believe that the former Great Eastern Railway was a pioneer in this country. Such advice is frequently given by advisory councils and similar bodies. The complexity of the questions raised by some proposed improvements is shown by the steps taken by the North Eastern Region, which is considering some adjustment to certain diesel train services between Newcastle and Carlisle, and seeking the co-operation of passengers regularly using some peak-hour business trains, to ascertain their wishes. Supplies of a form of questionnaire have been issued to stationmasters, and copies may be had on request. The questionnaires invite passengers to express a preference for alternative suggestions. For instance, to provide an eastbound service into Newcastle from Riding Mill at about 8.40 a.m., an additional stop would be needed to the 8.30 a.m. from Hexham, involving a 2 min. later arrival at Newcastle. By means of the questionnaire it is hoped to assess the demand for such a service and also the extent to which the later arrival in Newcastle would inconvenience passengers. The method of dealing with the completed questionnaire forms is not described. No doubt electronic devices will play an important part in future enquiries of this kind.

Side Loading of Motorcars

THE time taken to place vans and flat wagons for end loading and unloading has always been a disadvantage of carrying motorcars and other road vehicles by rail, though arrangements for quick loading and unloading by end ramp have existed for some time with British Railways "car-sleeper" trains. The Western Region, however, should be able to open up a new field for transport of passengers' cars by fast passenger train by the use of a new type of van, illustrated elsewhere in this issue, which facilitates side loading from a normal passenger platform. Features include roller shutters which almost completely open up each side, and a turntable on the floor of the van, working on a pivot which slews the turntable over the platform to either side to a distance of 9 ft. The motorcar is driven over two lightweight wheel-fitted ramps on to the turntable, and, resting on its own wheels, is slewed into the van. Adjustable foam rubber buffers inside the van provide complete security to the car in transit. The new vehicle can be opened up, the ramp run out and a car loaded and secured in a little over 3 min., only one man being needed besides the car driver. As soon as sufficient supplies of the new vehicle are available, it is intended to introduce an experimental service between Paddington and West Wales.

Signalling Developments in Austria

ELECTRIC signalling methods continue to replace mechanical on the Austrian Federal Railways, and during 1956 a number of new installations were brought into service, at times—as for example at Kufstein—in connection with the rebuilding or rehabilitation of stations and rearrangement to better advantage of their track layouts. In many places a centrally-operated "panel" apparatus, under the control of the station supervisor, has replaced two mechanical signalboxes, one at each end

of the station, though mechanical equipment is not being abandoned entirely and a design able to be used satisfactorily for central operations of such stations was applied at some places during the year. On certain sections converted from double to single track on economic grounds, the signalling and block working had, of course, to be rearranged, and the opportunity was taken to modernise them. Light signals are, as would be expected, gradually supplanting the old semaphores and discs and a standard system of aspects has been adopted for them.

Combustion Engine Progress

DURING the past twelve months several editorial references have been made in this journal to the International Congress on Combustion Engines (C.I.M.A.C.) which begins next week at Zurich. These references have included a full list of titles and authors of papers to be presented, a discussion of the theme and aims of the Congress, and an indication of the enhanced part to be taken this year by the British Isles due to the untiring efforts of the British National Committee under the organisation of Mr. W. K. G. Allen, Chairman & Joint Managing Director of W. H. Allen, Sons & Co. Ltd. All that now remains for those not attending the Congress is a study of the contents of the presented papers.

It will be remembered that, on the occasion of the C.I.M.A.C. Congress at The Hague in 1955, Tothill Press Limited produced a special publication entitled *Diesel Engine Progress*. This covered the history of the diesel engine and the evolution of diesel traction on railways and contained illustrated sections on individual diesel engines for rail, marine, and stationary use. A directory of principal engine makers was included and the whole prefaced by messages from Mr. Allen and from Mr. P. C. Tharlet, President of the Conference.

This publication, which enjoyed considerable popularity, has now been followed by another, devoted to the ground covered by the present activities of C.I.M.A.C. Though the price remains the same—five shillings—the scope of the issue, which is entitled *Combustion Engine Progress* in view of the changing emphasis apparent in the aims of the Congress, has been widened and the number of editorial pages increased to 124. Contents include exhaustive and profusely-illustrated articles written by foremost experts in the field, led by Dr. Ing. Alfred Büchi, who writes on the history of turbo-charging. Other contributions come from Mr. James Calderwood of Associated British Oil Engines Limited; Mr. G. B. R. Feilden of Ruston & Hornsby Limited; Mr. James Hodge of Power Jets (Research & Development) Limited; Mr. John Lamb and Mr. L. Birts of Shell Petroleum Co. Ltd., and Mr. A. H. Smith and Mr. J. D. Alrich of the General Electric Company, U.S.A. The directory of diesel engine makers has been revised and brought up to date, and three further directories covering gas turbine, pressure charger, and gas generator makers have been added. The articles cover every aspect of the field: the histories and development of pressure- and turbo-charging; the influence of pressure-charging on railway, stationary, and marine installations, gas turbine theory, gas generator power plants, and certain British and American gas turbines. The illustrated sections dealing with individual engines which were a feature of *Diesel Engine Progress* have been retained and are presented under the headings of "Pressure Charger Makes" and "Gas Turbine Makes." As in *Diesel Engine Progress*, a preface is provided by the Editor and by messages from Mr. Allen and Mr. Tharlet, and these messages have been augmented by one from Mr. Max Zwicky, the Chairman of the Organising Committee of the Congress. Great pains have been taken to make this latest special issue truly comprehensive, and there is every hope that *Combustion Engine Progress* will be regarded as a valuable work of reference for several years to come.*

* *Combustion Engine Progress* is published by Tothill Press Limited, 33, Tothill Street, London, S.W.1, price five shillings.

London Midland Region Traffic Organisation

THE purpose of the new traffic organisation in the London Midland Region is by decentralisation to bring about more direct and rapid contact between railway users and the railwaymen with whom they transact business in the matter of quoting charges, and greater flexibility and speed as between the commercial and operating staffs in arranging services. The changes are designed to implement the policy of decentralisation laid down by the White Paper of 1954 on the reorganisation of British Railways; they have been decided after consideration by the London Midland Area Board, under the chairmanship of Lord Rusholme, and by the General Manager of the Region, Mr. David Blee. They are intended to equip the London Midland Region to face the ever-increasing competition between rail and road, more particularly for some of the lighter freights, and to apply to the best advantage the new railway charges scheme. They are the more important in that the traffic of the Region amounts to rather less than one-third of that of all British Railways, from a large proportion of the industrial districts of Britain, besides participation in long-distance traffic to and from Scotland and some seaports.

The reorganisation is briefly as follows. The functions of the Chief Commercial Manager, Chief Operating Superintendent, and Motive Power Superintendent of the London Midland Region have been combined under one Officer, styled Director of Traffic Services; Mr. E. W. Arkle, Chief Commercial Manager, has been appointed to this position. A new post of Assistant General Manager (Administration) has been created with the prime responsibility of developing and carrying through the plan; and Mr. E. S. Cox, Chief Operating Superintendent, has been appointed to it. The Region is to be divided into six geographical Divisions centred on London, Nottingham, Birmingham, Manchester, Liverpool, and Barrow.

A Divisional Traffic Manager is to be appointed for each Division. He will take charge of the business functions within his Division and will be responsible to the Director of Traffic Services. The Divisional Traffic Managers will exercise their functions by means of the District Officers of the Commercial, Operating, and Motive Power Departments; they will be assisted by Traffic Costing and Public Relations organisations and will progressively develop other functions. The Divisions will eventually become self-accounting areas.

The District Officers' status will not be diminished in any way, but the present district boundaries will in some cases be re-drawn so as to do away with anomalies, and differences in boundaries as between the departments; joint sections will be established for the district offices so far as this is possible for such functions as staff, new works, train services, and transits. The development of the new organisation will mean a progressive "reduction" of the headquarters' organisations of the present Chief Commercial Manager, Chief Operating Superintendent, and Motive Power Superintendent, though certain important functions will remain at Regional Headquarters under the control of the Director of Traffic Services. There will thus be a maximum possible decentralisation of management functions from Headquarters to the Divisional Traffic Managers. The existing Divisional Operating and Motive Power Officers at Crewe, Derby, and Manchester will still be responsible for through working, timing and diagramming.

It is planned to carry the re-organisation out in stages, the first of which will be the setting up of Divisional Traffic Managers' organisations at Manchester and Barrow. The names of the two Divisional Traffic Managers will be announced as early as possible, to be followed later by those of the other Divisional Traffic Managers. The new organisation will be brought into operation as quickly as possible but obviously the full implementation of the plan will need a little time. Completion may be expected in from 12 to 18 months.

It may be argued that the existing structure could be made to work so as to obviate the necessity for these

organisational changes. On the other hand, Mr. Blee, who has long experience of commercial activities on British railways is—rightly, we feel—seized of the necessity to take vigorous steps to enable the railways to make their way in increasingly competitive conditions. Students of recent railway history may see, in the new organisation, some similarity with previous schemes for reorganisation before the last war; and indeed Mr. Blee has studied these with a view to finding a solution. Given the necessity for a change, and the geography of the railways of which the Region consists—which does not lend itself to an organisation such as that of the Operating Divisions, based on the historic L.N.W., Midland, and L.Y.R.—and the economic geography, the new organisation seems to be the best that could have been devised. The suggestion has been made more than once that the Region should be divided into two. Apart from the resultant upheaval, this would not solve the problem of decentralisation within either of the Regions so formed.

A notable point is the name given to Mr. Arkle's new post: Director of Traffic Services is psychologically far better, because it implies more authority, than, say, Assistant General Manager (Traffic); this should do much to lessen the burden of business enquiries and demands made by the public on the General Manager and his staff. The choice of Nottingham, rather than Derby, is sound as the headquarters of the Traffic Manager in the Eastern Midlands; Nottingham is better situated from the industrial aspect, and it is better that the new headquarters should be away from Derby, where various railway offices and installations already exist. That the Divisions will eventually become self-accounting areas, as is the case with those of British Road Services, is most satisfactory; we agree with Mr. Blee that there is no greater stimulus to efficiency than such accountability, with allowances made for geographical factors governing the amount of traffic that can originate in individual Divisions.

The greatest objection to changes of this sort, however desirable they may be, is the disturbance they are bound to cause. In this case every effort has been and is being made to acquaint all concerned with what is to happen and what, as the scheme is gradually implemented, is happening, with full instructions issued to all concerned as each new Division is constituted. The trade unions concerned have been consulted. Provision has been made for any redundancy. Many of the senior staff will share responsibility in the creative work of building the new structure; having been consulted and well briefed, they will not find themselves suddenly obliged to implement plans imposed from above. Nor, eventually, will the new organisation absorb more manpower; it has been calculated that, after a transitional period, the amount of headquarters personnel in the Region will be reduced when all six Divisions are functioning.

New South Wales Government Railways

WE have received from Mr. N. McCusker, Commissioner for Railways, New South Wales, a copy of his report on the operations of the Department of Railways for the year ended June 30, 1956. Earnings for the year amounted to £75,386,106 and expenses totalled £74,904,373, resulting in a profit on operations of £481,733. An amount of £1,000,000 was received from he Government as a contribution towards losses on working of country developmental lines and an amount of £800,000 was received as a contribution towards payments due from the Government Railways Superannuation Account, making the net receipts £2,281,733. This amount was insufficient by £7,625,998 to meet interest on loan capital, sinking fund contributions, and other statutory charges.

Concessions allowed by the Department totalling £535,252 consisted of £453,876 in rebates of freight to consignees of mill products, flour exported, rice, coal for manufacture of gas and for hospitals, and for canned fruits, jams and other goods; £65,098 in reduced charges for the transport of livestock and fodder, and £16,278 in travelling concessions to blind soldiers and their guides. Passenger journeys totalled 280,469,989, a decrease of 947,049 on the record number for the previous year. The goods traffic hauled amounted to 18,055,710 tons, a decrease of 611,077 tons on the total hauled in 1954-55. Livestock wagons hauled totalled 153,049, an increase of 2,581. Some of the principal results and those of the preceding year are compared below:—

—	1955-56	1954-55
Total miles open	6,103	6,102
Earnings	£75,386,106	£73,360,744
Working expenses	£74,904,373	£68,396,882
Balance	£481,773	£4,963,862
Percentage of profit to capital invested	4s.	£2 3s. 5d.
Percentage of working expenses to earnings	99·3	93·23
Earnings per average mile open	£12,352	£12,022
Working expenses per mile open	£12,273	£11,209
Return per average mile open	£79	£813
Passenger journeys	280,469,989	281,417,038
Goods tonnage	18,055,710	18,666,787

The report contains a special section describing the arrangements made to commemorate the centenary of the New South Wales Government Railways, between September 10 and 27, 1955.

Electric train services were extended from Blacktown to Penrith, a distance of 12¼ miles, on October 9, 1955, and between St. James and Wynyard via Circular Quay, a distance of 1¼ miles, on January 22, 1956. The extension from Blacktown to Penrith was the second stage of the programme to provide electric train services as far as Lithgow, the first stage, from Parramatta to Blacktown, having been opened for traffic on February 26, 1955. The completion of the City Railway avoided the dead-end working previously necessary at St. James and Wynyard (low level) and improved the flow of traffic. A daylight service was inaugurated from Sydney to Melbourne on March 26, 1956, and from Melbourne to Sydney on March 27, 1956. The New South Wales train and the Victorian train that provided the service are air-conditioned and are hauled by diesel-electric locomotives. These trains enabled passengers to travel between the two capital cities in 13½ hrs.

The value of stores purchased during the year amounted to £25,539,753. Largest purchases were: coal £5,453,972; iron and steel products £3,039,625; electrical equipment £2,699,259; timber £1,780,050. At June 30, 1956, the capital expenditure o lines open for traffic was £250,144,314.

The Commission pays a tribute to members of the staff for the efficiency and devotion to duty displayed throughout the year.

The Railway Position at April 21

THE information contained in No. 4 of *Transport Statistics* proves that British Railways have not secured any permanent benefit as freight carriers through the restrictions on oil supplies, which were in force from November to May. In the April period the railways originated 21,197,000 tons of freight train traffic, 170,000 tons more than in 1956, but about 144,000 tons less than in 1955 and 1954. An increase of 217,000 tons in forwardings of coal and coke avoided a bad setback. Once more the railways are losing their grip on high-rated merchandise. In the four weeks to April 21 they originated only 3,265,000 tons. That was a decrease of 47,000, or 1·4 per cent, from last year and of 7 per cent below the two previous years. Compared with 1951 there was a decline of about 20 per cent and there is no sign of a check to the downward trend. The advance statement of receipts for the next four weeks to May 19 points to another fall in merchandise carryings.

The aggregates for 16 weeks to April 21 tell the same story of the temporary nature of any gain in merchandise carryings by rail during the emergency. These amounted to 14,021,000 tons, an increase on 1956 of 573,000 tons

(4·3 per cent), but in round figures a million tons below 1954 and 2·5 million tons less than in 1951. The increase on last year involved the working of 133,738,000 more merchandise ton-miles, a rise of 7 per cent, whereas the movement of 2,389,000 extra tons of coal and coke, an increase on 1956 of 4·5 per cent, needed the working of only 30,061,000 more ton-miles, a rise of 0·9 per cent. In June the length of the average haul of merchandise is pretty sure to shorten and cut the inflated volume of ton-miles.

In the 16 weeks all Regions turned out more ton-miles of all classes of traffic, the percentage increases varying from 0·1 in the London Midland and 0·8 in the Southern to 4·9 in the Scottish and 6·3 in the Eastern, which worked 22 per cent of the total ton mileage and accounted for nearly half of the all-line increase of 189,443,000 ton-miles, or 2·8 per cent. In contrast, the London Midland Region contributed little more than one-half of 1 per cent to the increase. If the two Regions were responsible this year for the same mileages of road as in 1955, the London Midland worked 527,944 ton-miles per mile of road while the Eastern was turning out 547,370 ton-miles. The series of Transport statistics would be more useful if a few notes were added to explain abnormal changes in the trend of significant figures.

Passenger Traffic

In the first quarter of the year passenger journeys on British Railways numbered 264,996,000, an increase on 1956 of 32,806,000 or 14·1 per cent. Of these journeys 81,554,000, or over 30 per cent, were made by season ticket holders. The Southern Region originated 106,672,000 journeys, equal to 40 per cent of the all-line aggregate and accounted for 38 per cent of the total increase in passengers. Season ticket travel formed 42·6 per cent of the Southern Region carryings and 36 per cent of the Eastern's movement of 42,603,000 people. The Western Region passenger business differs, as shown by its comparatively small number of journeys—28,375,000, of which only 22 per cent were made with season tickets.

In all Regions petrol rationing stimulated first class travel, which was 4 per cent better in the first quarter of 1955 than in 1954, but fell away by 1·3 per cent in 1956. This year the number of first class journeys rose by 1,312,000, or 25·7 per cent, to 6,423,000. First class passenger takings rose in the same proportion to £3,940,000. Total passenger takings for three months to March were £29,678,000 against £26,137,000, an advance of £3,541,000, or 13·5 per cent. Early in the year some railway officers hoped to retain part of the additional revenue for good and all, but an increase of 22·2 per cent in passenger receipts for the first four-week period of the year fell to one of 5·2 per cent for four weeks to the middle of May. The June statement of receipts may decide whether the railways have had simply a casual windfall.

London Midland Region Summer Services

ALL other changes in the summer timetables of the London Midland Region are overshadowed by the complete reorganisation and acceleration of the main-line services of the Midland Division, which show, as was done some years ago concurrently with the introduction of "Britannia" class Pacifics in the Great Eastern Section of the Eastern Region, that the key to success in timetable improvement is, in effect, to take the tables to pieces and start again. The Midland changes are of so radical a character that a detailed description has required an article on another page. From this it will be realised that a timetable which cuts an average of 14 min. from all journeys between London and Nottingham, 15 min. from and to Leicester and Sheffield, 26 min. from and to Derby and 35½ min. from and to Manchester, as compared with the service of a year previously, is revolutionary indeed. The reduction of the fastest St. Pancras-Manchester train times to 3¼ hr. each way will quite probably draw patronage from the Euston-Manchester route, which will not be without advantage while the latter is being electrified.

In the Western Division the major development is, of course, the introduction of the "Caledonian," which sets an entirely new precedent for the West Coast Route with its early departure—8.30 a.m.—from Glasgow Central and its late start—4.15 p.m.—from Euston. Both trains will cover the 401·4 miles between London and Glasgow in 6 hr. 40 min., and thus at just over a mile-a-minute average, though 10 min. slower than the pre-war "Coronation Scot" in 1939; the run of 299·1 miles between Euston and Carlisle will be made each way in 291 min., at 61·6 m.p.h. average. A path has been found for these two fast trains with singularly little disturbance of other passenger services. In the down direction the 3.45 p.m. from Euston to Manchester will be accelerated by 7 min. to Nuneaton, but will wait there 17 min. for the "Caledonian" to pass, and so be 10 min. later into Manchester. It might be suggested that were this train to call at Watford and to be diverted via Northampton, providing an extremely useful mid-afternoon service for both these important centres, it could be passed by the "Caledonian" at Rugby and the tedious Nuneaton wait avoided at a cost of no more than 4 min. additional running time. In the up direction the 10 a.m. from Blackpool will omit the Stafford stop and reach Euston at 3 p.m., clear of the 3.10 p.m. arrival of the "Caledonian," which will pass the 8.30 a.m. from Carlisle, omitting its Hartford stop and brought into Crewe 15 min. earlier, at the latter station.

An important change is that the up "Midday Scot" will leave Glasgow at 3 p.m., instead of 1.30 p.m., and cease to call at Crewe, running the 299·1 miles from Carlisle to Euston non-stop in 5 hr. 24 min. and arriving at 10.20 p.m., an acceleration of 15 min. Through coaches will still be run from Glasgow at 1.30 p.m., but now for attachment to the 12.20 p.m. from Perth to Euston, reaching London at 9.46 p.m. This summer there will be no 10.15 a.m. relief from Glasgow to Euston, and the up "Royal Scot" therefore will call at Carlisle Citadel station to pick up passengers instead of at No. 12 box to change engines, as heretofore; this will mean an acceleration of 60 min. for Carlisle passengers. It is of interest that no fewer than eight non-stop runs will be made daily between London and Carlisle, over distances between 298·2 and 301·1 miles (according to where the stop is made), which is easily a world record over so great a distance.

There will now be five day services from Euston to Scotland, at 10 a.m., 1.30 and 4.15 p.m. to Glasgow and 10.10 a.m. and 1.35 p.m. to Perth, and five in the reverse direction, at 8.30 and 10 a.m. and 3 p.m. from Glasgow and 9 a.m. and 12.20 p.m. from Perth, all the three Glasgow trains each way being timed at a high speed. By comparison, the speed of the services between Liverpool and Manchester and the Scottish cities remains extremely low. It is hardly an advertisement for British railway enterprise that the average journey time of the three day trains in each direction daily between Liverpool and Glasgow, 221·2 miles, is 5 hr. 40 min. (39 m.p.h. average), and between Manchester and Glasgow, 223·2 miles, 5 hr. 47 min. (38·6 m.p.h. average), and that through the winter, even at this speed, only two of these trains each way remain in operation.

As stressed previously in these columns, also, there is still a serious lack in the communications between Sheffield, Leeds, and Glasgow in that the last day service for Scotland leaves Sheffield at 1.32 p.m. and Leeds at 2.41 p.m. (as compared with 4.40 and 5.32 p.m. respectively in 1914), while there is no southbound service from Glasgow to these cities between 9.20 a.m. and 4 p.m., whereas in 1914 there was the 1.30 p.m. departure, reaching Leeds at 6.23 p.m. and Sheffield at 7.15 p.m. To test the public reaction, an inexpensive experiment might be tried with one of the diesel railcar sets in the Cumberland pool by linking up an afternoon service from the south into Leeds with an evening service from Carlisle to Glasgow (e.g. the 12.15 p.m. from St. Pancras, reaching Leeds at 4,31 p.m., with the "Midday Scot," at 7.10 p.m. from Carlisle, arriving in Glasgow 9.10 p.m.) over the 113 miles separating Leeds from Carlisle. This would give departures from Sheffield and Leeds for Scotland 2 hr. later than now.

LETTERS TO THE EDITOR

(The Editor is not responsible for opinions of correspondents)

The Channel Tunnel

June 5

SIR,—I was interested in Mr. Latham's letter in your May 31 issue. British Railways and the French National Railways must not miss the present opportunity to build the Channel Tunnel, which could, if need be, be a railway tunnel only, and could perhaps even be a single line, appropriately signalled. With electric traction no ventilation problems would be involved. A larger bore tunnel for road traffic could be built later.

The two railway undertakings can hardly claim that capital is not available. The B.T.C. could abandon amongst other things the Route "C" tube project for London. The S.N.C.F. could abandon some of its electrification schemes, of which those for electrification from Paris to Lille and Lyons to Marseilles seem largely designed to replace 4-8-2 and 2-10-0 steam locomotives not yet 10 years old; it can hardly be argued that steam power is incapable of handling the traffic.

Yours faithfully,

J. COUSINS

39, Caird Street, W.10

Track Loading Fundamentals

May 29

SIR,—The valuable comments made by Dr. Sparrow in your May 17 issue are appreciated. As the ability of soils to support a loaded footing is directly proportional to their shear strength, the criterion of safe allowable shear stress rather than vertical stress is the more realistic method.

For the case of a foundation the designer would ensure that the computed shear stress in the material nowhere exceeds its shear strength, although in practice settlement is more often the criterion.

Whereas both field and laboratory tests can be made to determine the shear and direct stresses a soil will withstand, and pressure cells can be used to determine the distribution of vertical stress under a model of a non-uniformly loaded irregular shaped footing, there is no apparatus yet designed to measure the distribution of shear stress. This can be computed only from a knowledge of the principle stresses which would occur in a perfectly elastic homogeneous material.

As the soil may vary from dry or wet granular to cohesive, reasonably accurate determination of the distribution of shear stress would be difficult. Any purely theoretical solution needs to be accepted with reservation, since no soil is perfectly elastic and homogeneous, and most soils are of the C-ø type.

The probable ultimate bearing capacity of a soil can be computed by Terzaghi's formula from laboratory tests to determine the density, cohesion and angle of shearing resistance, and using a load factor of say 3, the allowable bearing pressure may be deduced.

It has been suggested* that determination of the shear strength at various depths may be made by tests, and it be assumed that plastic flow does not commence until the computed direct stress exceeds π times the shear strength. This, however, is an approximation which must be accepted with reservation. The more generally used methods for runway and roadway design are based on bearing or penetration tests or classification of soils, and not on the shear stress. For example, rigid pavements are commonly designed from Westergaard's analysis and flexible pavement design based on the C.B.R. method or Casagrande soil classification, and charts are now published giving the equivalent subgrade bearing value for each method.

In actual practice the footing of a sleeper is not rigid or uniformly loaded, and due to the wave-like motion in the rail the load on the rail-seat would travel from one edge of the sleeper across it with the passage of a wheel, and this makes it difficult to determine the unit loading.

For railway track the ballast section does not extend below ground level, and although surface strip loading it is not uniform strip loading. As the sleepers, ballast and subgrade form a three-layer system, the rigorous computation is given by the theory of an elastic layer acted upon by a flexible load on a finite area. The physical properties of the subgrade can vary in essential character and the degree of adhesion between the sleeper and ballast and ballast and subgrade would be difficult factors to determine.

The computations would be too tenuous for practical application, as the highway engineer found. The need for empirical data is particularly great in the field of soil mechanics. Accordingly, for the determination of ballast depth a more direct approach has been made and simplified empirical formulæ have been established, which for ballast depths in practice are in fair agreement with the more rigorous computations. The formulæ deduced are for average rather than the maximum intensity of pressure on the roadbed, since it is considered the soil has a recovery period between the passage of wheels.

The assumption of a constant angle of load distribution in the ballast material may be considered invalid, as indeed it would be for cases where ballast depth greatly exceeded twice width of sleeper, but for ballast depths within this range, which conditions generally occur in practice, the approximation is reasonably close to the distribution of vertical stress derived by Boussinesq's analysis. The error would be within the limits of the knowledge an engineer could hope to obtain on the physical properties of the roadbed.

It is agreed that further research is required before a completely satisfactory method of design can be evolved. The object in the series of articles published was to establish simplified empirical formulæ, found to have some experimental justification.

Yours faithfully,

C. W. CLARKE

Perth, W.A.

* "The Construction of Pavements on a Clay Foundation," by R. Glossop and H. Q. Golder; I.C.E. Road Paper No. 15 (1947).

The New Haven Railroad

June 8

SIR,—In your issue of June 7 an article on U.S.A. railway reports described the New Haven Railroad's struggle to make ends meet. One of its handicaps was the possession of 291,600 shares, par value $100 apiece, in the New York, Ontario & Western Railway, an affiliated concern working freight traffic across New York State from Middletown to Oswego where the New York Central and the Lackawanna were powerful competitors. Over the last six years the N.Y.O. & W. had a deficit rising from $423,000 to $2,081,770. Though 46 diesel units were installed to improve operating results, the January and February deficit was 14 per cent larger than in 1956 and on March 29 the railway was abandoned. The diesels will probably be bought by other roads and put into traffic again.

Between 1947 and 1956 the mileage operated by Class 1 railways in the U.S.A. declined gradually by 2,320 miles, or 1 per cent, but the closing of an independent railway with over 500 miles of line is exceptional.

Yours faithfully,

R. BELL

Frognal, N.W.3

WHITSUN WEEKEND RAIL TRAVEL.—During the three busiest days of the Whitsun weekend more than 466,600 passengers are reported to have travelled in 1,489 long-distance trains from the principal London stations, 14,000 more than for the corresponding period of last year. This was notwithstanding bad weather in many districts on the Sunday and Monday.

THE SCRAP HEAP

Last of L.Y.R. Hughes 0-6-0s

The breaking up of a former Lancashire & Yorkshire 0-6-0 locomotive, which, though built for freight working, hauled many passenger trains and excursions, especially at peak traffic periods, brings to an end the Class 3 of L.Y.R. freight tender engines. The last of the class, No. 52551 of the London Midland Region, built in 1912, was one of 20 designed by George Hughes and was originally numbered L.Y.R. No. 20 and later No. 12551 of the L.M.S.R. Coupled wheels were 5 ft. dia., tractive effort 27,405 lb., and total weight of engine and tender in working order 72 tons 12½ cwt.

The last of the L.Y.R. Hughes goods engines, now broken up

Provision for Women Passengers

Mention of the new "powder rooms" in certain railway coaches reminds a Victorian reader of the days when there was no provision of any kind for the woman traveller—either on the railways or on the roads. . . . Many may not know that it was George Bernard Shaw who was responsible for the introduction of "ladies' rooms" and "toilets." With his pen he fought nobly for this cause, and although much maligned at the time for publicising such a subject, he won in the end, and women all over the country are grateful to him for his contribution to this vital advance in the cause of equal rights for women.—*From "The Manchester Guardian."*

[The statement that there was "no provision of any kind" is not entirely true of the railways. Provision was normally made from very early days at terminal stations, though in some cases the hotel at the terminus was regarded as sufficient. The Railway & Canal Traffic Act, 1854, required the provision of facilities at "junctions or elsewhere as necessary"; but for many years this did not extend beyond a very few stations, and the Board of Trade demands under their "Requirements" of 1858 do not seem to have been very exacting. Shaw's campaign undoubtedly influenced policy in many directions—ED., *R.G.*]

Discretion is the Better Part . . .

A beekeeper, called by the police, was waiting at Ipswich main line station when a London train pulled in. All the way from Chelmsford messages had been passed saying that bees were escaping from a swarm of 40,000 in a box in the guard's van. . . .

Ipswich arranged for an apiarist, Mr. Edward Bowen, to go to the station. When the train drove in Mr. Bowen entered the van. One by one he enticed about 100 angry bees back into their box—without a single sting. —*From the "Evening Standard."*

Shilling Station

Buying a railway station for 1s. seems beyond the bounds of possibility, but such a purchase was completed recently by the Department. The station was Mobiltown (on the Altona line) built in 1953 for the Standard-Vacuum Refining Company at the company's expense. Included in the terms of the agreement was a clause providing that, in the event of the company no longer requiring the station, the Commissioners would, if general traffic requirements warranted it, buy the station at an agreed valuation. Recently, the company . . . offered the station to the Department for the sum of 1s. The offer was accepted.—*From "Victorian Railways News Letter."*

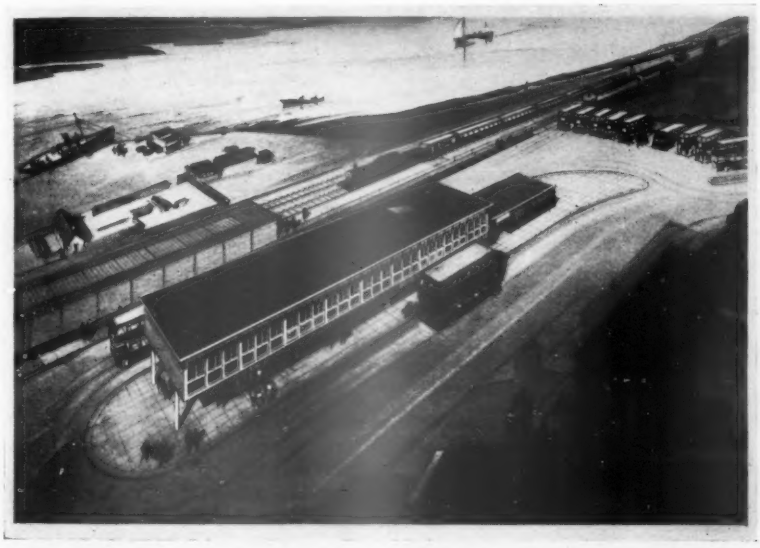
Spare that Whistle!

(*Forthcoming cacophony on British Railways*)

The day is fast approaching
When no longer shall we hear
The locomotive whistle
On a midnight, shrill and clear.
Tomorrow we shall listen
With a little wince of pain
As we hear the honking herald
Of the soulless diesel train.
No longer will the "Scots" or "Kings"
Have distinction in their voice:
The squawking diesel duckhorn
Doesn't offer any choice.
Away with dismal duckhorns
And their horrid bleat and blare!
Put whistles on the diesels—
And blow with compressed air.

A. J. R

Bus Station Design "Hung" in R.A. Exhibition



Design by Mr. H. St. John Harrison, F.R.I.B.A., for a proposed bus station at Barnstaple, adjoining Barnstaple Town Station, among the architectural designs "hung" in the Royal Academy Summer Exhibition

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

NEW ZEALAND

New Station at Christchurch

The latest techniques have been incorporated in the new station at Christchurch, now under construction. The walls of the station building which face the platform will have the lower part finished in tiles with bands of tiles showing Maori motifs. The entrance doors and frames to the building and ticket lobby will be finished in bronze.

INDIA

Double-Riveting of Wagon Doors

Double-riveting of wagons, over and above locking, showed an appreciable downward trend in the incidence of pilfering of wagons in transit or in the yards of the Eastern Railway in the three-month period ended December 31, 1956. The drive to encourage double-riveting is being continued, this method of fastening wagon doors is one of the surest safeguards against pilferage.

Matheran Line Diesel Locomotives

Three 290-b.h.p. B + B diesel-hydraulic locomotives built by Arn. Jung G.m.b.H. have been placed in service on the 2 ft. 6 in. gauge section of the Central Railway between Neral, on the Bombay-Poona main line, and the hill station of Matheran. They replace steam locomotives which have worked the line for some 50 years.

With a tractive effort of 14,000 lb., or 50 per cent more than that of the steam engines, they can haul a 35-ton train in fair weather up the steep gradients as against 25 tons by the old engines in similar circumstances. At peak traffic periods it was formerly necessary to run a second and sometimes a third train in the morning, apart from the afternoon service, to clear the traffic. With the new engines the need for a second train will often be dispensed with, whilst a third train would very rarely be needed.

PERSIA

Extension of State Railways

New lines recently opened to traffic include, in the north-east, the extension from Chahroud to Machehad, 310 miles; in the north-west, the extension has been completed from Mianeh to Maragheh, 104 miles.

UNITED STATES

New York Central Dining Service

To provide meal and refreshment service in some of its less popular long-distance trains without the expense of running a dining car with a complete dining car staff, the New York Central System has introduced a new method of meal service. Hot meals are prepared at centrally-situated kitchens, and the portions are then stored in individual vacuum containers which are loaded on to the trains, where a small staff serves complete meals set out on trays to passengers at their seats. This application of the vacuum principle is the outcome of some five years of experiment by the Mealpack Corporation, and it is claimed that the cooked food, while kept piping hot for a considerable length of time, does not lose any of its appetising character. The trains concerned operate between New York and Albany, New York and Buffalo, and Cleveland and Cincinnati.

Merger

The Interstate Commerce Commission has authorised the merger of the Nashville, Chattanooga & St. Louis Railroad into the Louisville & Nashville Railroad, the merged system continuing under the overall control of the Atlantic Coast Line, which is the principal stockholder. To finance the acquisition, the L. & N. is issuing $19,200,000 of capital stock, in 384,000 shares of $50 each, to exchange for 256,000 shares of N.C. & St.L. stock on a 1½ to 1 basis. For the past 75 years the N.C. & St.L. has been under the control of the L. & N., but the two will now be managed and operated as one integrated railway. The total route mileage of the merged system will exceed 6,000, or seventeenth in length among the major U.S.A. railways, but the enlarged L. & N. will take thirteenth place in gross revenue, and, because of its efficient and profitable operation, eighth in net income.

Diesel-Electric Haulage in Rhodesia

English Electric 2,000-h.p. 2-Co-Co-2 locomotive at the head of the first train hauled by a diesel-electric locomotive to enter Bulawayo Station, Rhodesia Railways, on a test run from Salisbury

ARGENTINA

New General Motors Locomotives

Senior officers of the Ministry of Transport and of the 5 ft. 6 in. gauge D.F. Sarmiento Railway were present at recent trials made with one of the new General Motors diesel-electric locomotives recently received from the United States. A 600-metre goods train, which with steam traction would have had to be run in two parts, was hauled from Mercedes to Luján with ease, while in a subsequent run with a special passenger train, the trip from Buenos Ayres to Pehuajó, some 186 miles, was made in 1½ hr. less than normal.

Possible Increase in Rates and Charges

At a recent press conference, Capt. Julian Fausto Menica, head of the National Railway Committee of the Ministry of Transport, hinted that an increase in rates, fares, and charges might be forthcoming shortly in view of the very considerable deficit incurred in the operation of the railways.

PORTUGAL

New Passenger Connection with France

From July 1 a new service, the "Iberia Express," will be provided daily between Paris and Lisbon and vice versa by means of first and third class through carriages between the Franco-Spanish frontier at Hendaye/Irun and Lisbon connecting with the "Pyrénées-Côte d'Argent" express between Hendaye/Irun and Paris. The "Iberia Express" affords journey times between Paris Austerlitz and Lisbon Rossio of 34 hr. 30 min. southbound and 33 hr. northbound.

FRANCE

Cement in Bulk

Reference was made in our issue of June 1, 1956, to the special containers and wagons, designed for unloading by means of compressed air equipment, which were being brought into use for the conveyance of bulk cement on the S.N.C.F.

At the end of the first year's working, more than 100,000 *tonnes* of cement had been conveyed in this way and the successful results have encouraged the S.N.C.F. to plan developments on a large scale. By the end of 1958 it is hoped to have 370 special wagons and 1,000 special containers in operation which will be able to transport nearly 800,000 *tonnes* of cement in bulk per year. It is hoped that in three to four years' time some 25 per cent of the French cement production, amounting to between 2,000,000 and 3,000,000 *tonnes*, will be moved by rail in this way.

Freight rates for cement moved in bulk by rail are 5 per cent less than those for cement in sacks. Traders can, if they wish, conclude a contract with the S.N.C.F. for the hire of specific wagons or containers, in which case they pay a fixed hire charge, but qualify for the private owner's rebate; a charge is also levied for the empty return of such equipment. Overall economies to the trader vary, *inter alia*, with the regularity of the traffic and the distances involved, but they have induced many undertakings to move cement in this way rather than by road.

Current from Catenaries for Signals

At Lille-Délivrance the S.N.C.F. is carrying out tests whereby current at 25,000 V. is drawn from the traction catenary and transformed to 110-V. current which is used for the operation of the principal signals in the vicinity of Lille, controlling movements into and out of the marshalling yard. Use is made of transformers weighing about one *tonne* which first reduce the voltage from 25,000 V. to 400 V. and subsequently to the required voltage of 110 V.

Publications Received

Modern Railway Working. By B. K. Cooper. London: Leonard Hill (Books) Limited, 9, Eden Street, N.W.1. 8¼ in. × 5½ in. 114 pp. Illustrated. Price 21s.—This well-produced book describes not only the way in which modern steam, electric, and diesel locomotives work, but also the working of passenger and freight trains, signalling systems, traffic control, and marshalling yards, together with other important aspects of railway operation. It also has an eye to the future with a description of the process of releasing atomic energy. In readable style, it gives an excellent general view of railway operation today, and explains technical points in enough detail for them to be appreciated by the layman. The many illustrations are well chosen, but the book might have been even better for a larger proportion of text, even at the expense of some plates.

Metal Industry Handbook and Directory, 1957. London: Iliffe & Sons, Limited, Dorset House, Stamford Street, S.E.1. 8¼ in. × 6 in. 536 pp. Price 15s.—In its 46th year of publication, this is a comprehensive source of reference of the non-ferrous metal industries. Information is given on the properties of the newer as well as the more familiar metals. This year's edition also includes a complete revision of the tables dealing with the weight of aluminium in sheet, rod, and tube. As usual, the publication is divided into four main sections covering general properties of metals and alloys, general data and tables, electroplating and allied process, and a directory of trade names, technical associations and so on.

Flow Production.—Produced by Print for Industry, Limited, 50, Deans Yard, Westminster, S.W.1, this illustrated brochure gives an insight into the flow production methods used by Lloyds (Burton), Limited, which produce various types of castings up to 15 tons in weight, side by side with a fully mechanised flow of repetition castings. The brochure deals with the many operations involved, including pattern making, core blowing, casting, continuous shot-blasting, and annealing. Particulars are also included of the properties of Lloyds high-duty cast iron, Lloyds ductile cast iron, and carbon, low alloy, and manganese steels.

Aluminium Electrical Engineering. The main object of this illustrated publication, obtainable from the Aluminium Development Association, 33, Grosvenor Street, London, W.1, is to show the range of existing applications of aluminium and its alloys and their potentialities in the electrical engineering field. Certain technical aspects are discussed in brief, in particular the development of jointing techniques. A brief statement of the case for aluminium covering economic and technical factors, is followed by summaries of relevant British Standards and of the electrical, mechanical, chemical and fabricating properties of aluminium materials for electrical uses. The survey of applications, which forms the major portion of the brochure, is grouped under four main headings: conductors and cables; telecommunications; stationary plant, and rotating machinery. The appendix tabulates the properties of materials used in electrical engineering applications (*a*) for conductors and sheathing and (*b*) for constructional purposes.

London Transport Inclusive Map.—London Transport is now issuing the first "all-in" pocket travel map it has ever produced. All Underground and British Railways lines and stations, Green Line coach routes and open spaces are shown in colour. All roads served by central and country buses are marked, but route numbers are omitted to keep the map clear. A special inset map shows the central part of the Underground with a "How-to get-there" index to famous buildings of interest to Londoners and tourists. The map covers an area of 800 sq. miles, stretching between Potters Bar, Hornchurch, Croydon, and Staines. It is being given free of charge on request to travellers, and is intended to supplement the existing pocket bus maps containing full route information, which will continue to be issued.

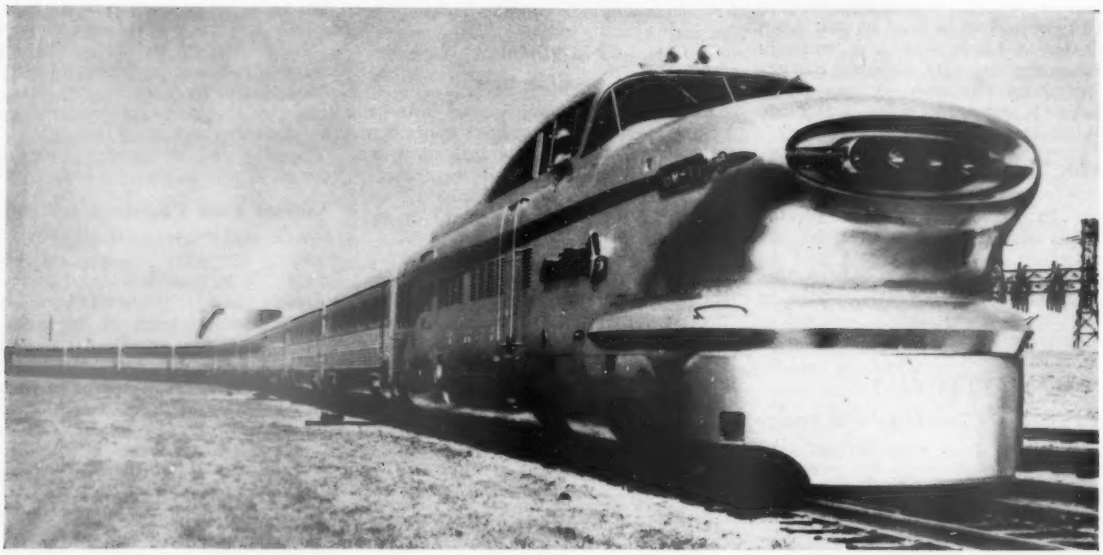
Chipping, Caulking and Scaling Tools.—The Consolidated Pneumatic Tool Company, 232, Dawes Road, London, S.W.6, has issued a new catalogue dealing with chipping, caulking and scaling hammers. The 16-page publication gives the specifications of the company's range of chipping hammers, scaling hammers, valveless stone tools, pneumatic scrapers and chisels.

Abandonment of Steam Power in the U.S.A.—2*

Change of design in steam locomotives to meet competition from diesel-electric traction

By A. G. Hoppe

Former Mechanical Engineer, Chicago, Milwaukee, St Paul & Pacific Railroad



Front-end view of the first General Motors 10-*car Aerotrain with three-axle locomotive*

THE first part of this article dealt with the earlier developments of diesel-electric traction up to the middle of June, 1935, during which year there was a sharp increase in the rate at which U.S.A. railways were acquiring diesel-electric locomotives.

Between 1924, when the first diesel-electric shunting engine was placed in service, and 1935 when the streamlined diesel-powered trains began to seriously threaten the position of the steam locomotive in high-speed passenger service, the latter was still the principal type of motive power. Recognising the need for improvement, designers of steam locomotives made every effort to improve its performance, particularly in freight and passenger service. With specific limitations as to thermal efficiency, the efforts were directed toward increasing capacity. With fixed limits in height and width, this was achieved by increase in length, increase in boiler pressure, and by the addition of cylinders. The gain in boiler capacity brought about by increased length was further enhanced by enlarging the fireboxes, thus permitting the burning of coal or oil at substantially increased rates.

In the mid and late 1920s, the builders of steam locomotives were prone to discount the possibilities of the diesel-electric, pointing to the previous success of the steam locomotive in withstanding the competition of electrification. Even the proponents of the diesel-electric were rather modest in their claims as to the extent to which this type of power might supplant the steam locomotive. By 1933 there appeared to be some change in the attitude of the steam locomotive builders when a definite effort was made to increase the thermal efficiency of the steam locomotive by increase in pressure beyond 300 lb. per sq. in. This was carried out almost entirely on the Delaware & Hudson Railroad, four experimental locomotives being built between 1925 and 1933, when the *L. S. Loree*, with a boiler pressure of 500 lb. per sq. in., and a thermal efficiency of 12 to 13 per cent was built. Despite the improvement in thermal efficiency, the use of locomotives of this type was not extended. Water tube fireboxes were developed and used on a number of railways, including the Delaware & Hudson; New York, New Haven & Hartford; and the Baltimore & Ohio railways.

Four-Cylinder Engines

The high-capacity steam locomotives took various forms. Three-cylinder locomotives were never popular in America. A number of locomotives of this type were built, the largest a six-coupled engine for the Union Pacific in 1926. Locomotives with five-coupled drivers were built in considerable numbers with 2-10-2, 4-10-2, and 2-10-4 wheel arrangement.

In passenger service the railways were more uniform in their practices, using for high-speed service a 4-6-4 wheel arrangement, and for heavy trains a 4-8-4 wheel arrangement. In many cases the latter was also used for high-speed freight service. It was apparent that those seriously interested in the steam locomotive began to be very concerned over its future about 1938, when the Association of American Railroads formed a committee for the further development of the reciprocating steam locomotive. Its first step was to determine the power requirement for operation of a passenger train of 1,000 tons at 100 m.p.h. on a straight, level track. Based on the results of these tests, a tentative specification for a four-cylinder rigid frame locomotive was submitted. In 1940 the committee was expanded to include representatives of all the major builders.

It is significant to note that it was not until 1941 that a serious effort was made to improve the reciprocating steam locomotive for high-speed operation by developing accurate counterbalance data. In another phase of the steam locomotive situation the solution came too late. A considerable number of high-capacity locomotives were built with 285 and 300 lb. per sq. in. boiler pressure. To reduce weight, low-alloy or higher carbon steels were used for the boiler shell courses, but after short periods of service several railways experienced trouble with cracks at the riveted joints. Permission from the Bureau of Locomotive Inspection was

* Part I appeared in our issue of May 3, 1957

received by the Delaware & Hudson Railroad, working with the Locomotive Construction Committee, for the application of an all-welded boiler on a small 2-8-0 locomotive.

This boiler was installed in 1937 with a test period of five years, prescribed by the Bureau of Locomotive Inspection, but it was not until 1946-47 that large, welded boilers, were installed on the heavier locomotives. By that time a number of the larger railways were using far more diesel-electric locomotives and were scrapping heavy locomotives, often because of boiler shell troubles.

The last serious effort on the part of the supporters of the steam locomotive was that carried out by the Pennsylvania Railroad. This took the form of four-cylinder locomotives with rigid frames. As part of the Association of American Railroads exhibit at the New York World's Fair of 1939, the Pennsylvania Railroad exhibited a four-cylinder 6-4-4-6 passenger locomotive. In regular service it was found that this locomotive could be operated only on certain sections of the railway because of clearance difficulties. To correct this a four-cylinder locomotive with a 4-4-4-4 wheel arrangement was brought out in the summer of 1942, which proved more successful, since in 1945, 50 such locomotives were ordered. A similar design for high-speed freight service was developed and built with a 4-4-6-4 wheel arrangement; the Baltimore & Ohio Railroad exhibited a high-speed passenger locomotive with a 4-4-4-4 wheel arrangement at the 1937 meeting of the Mechanical Division of the Association of American Railroads.

Steam Turbine Trials

No account of the efforts to maintain the supremacy of coal and steam on the American railways would be complete which failed to mention the trials made with steam turbines. The first of these was a joint effort of the Union Pacific Railroad and the General Electric Company, who built two units of 2,500 h.p. each, equipped with high-pressure steam boilers, and arranged for electric transmission.

The locomotives were to be fully automatic in operation and were arranged for heavy fuel oil. The locomotives were not successful, and after much publicity and little actual service, the attempt was abandoned. Next was the construction in 1944, by the Baldwin Locomotive Works and the Westinghouse Electric & Manufacturing Company for the Pennsylvania Railroad of a direct gear drive, steam turbine locomotive, of more or less conventional appearance, with a 6-8-6 wheel arrangement. This locomotive also failed to meet the expectations of its designers, and its use was not extended.

In 1945, the Chesapeake & Ohio placed an order on the Baldwin Locomotive Works for three 6,000 h.p. steam-turbine electric locomotives, designed for the use of coal, but again the locomotives failed to perform satisfactorily. This was followed by a joint effort of the Baldwin Locomotive Works, Babcock & Wilcox Company, and the Westinghouse Electric Corporation, who built for the Norfolk & Western Railway a steam-turbine electric locomotive, which was delivered to the railway on May 19, 1954, and is still in service.

In 1935, the Electro-Motive Company started the construction of a new plant for the building of diesel-electric locomotives of all kinds. Production commenced in 1936 with an accumulation of approximately $3,500,000 worth of

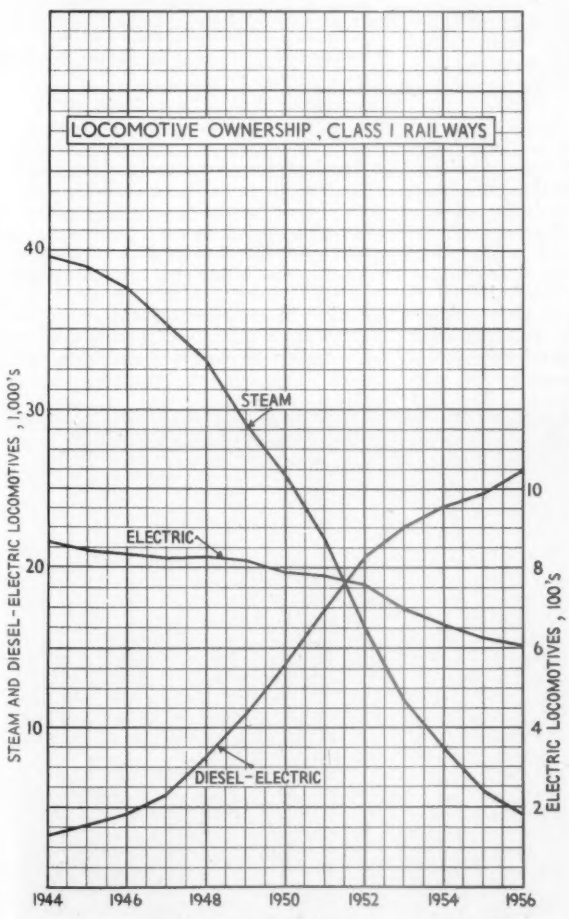


Fig. 1—Change in types of motive power units all Class 1 railways

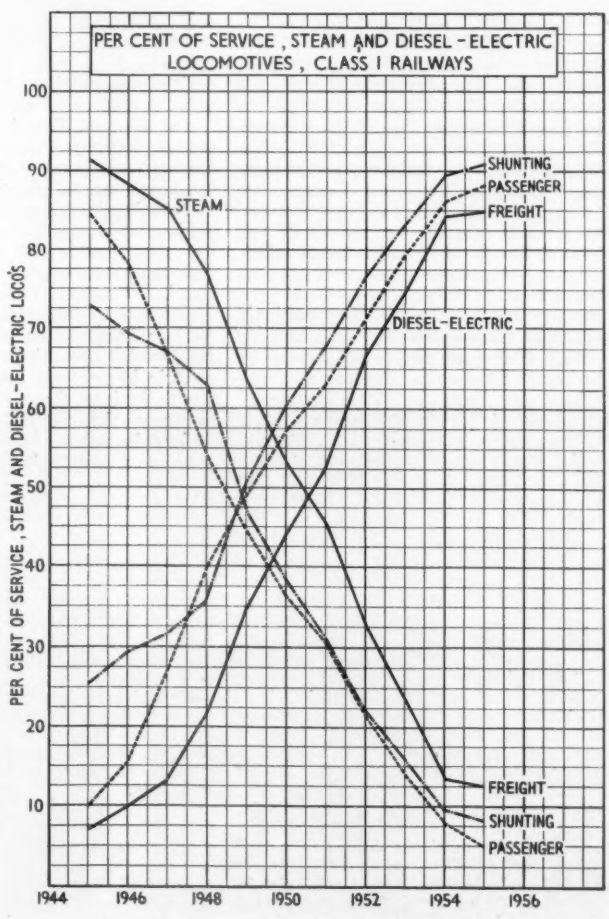


Fig. 2—Percentage of service performed by steam and diesel-electric locomotives

locomotives, and by June, 1936, expansion of the works was necessary. The plant began building 600 h.p. and later 1,000 h.p. diesel-electric shunting locomotives, which were in many instances offered to the railways on the basis that payment would be made out of savings in operating costs produced by the locomotives. By this time the Electro-Motive Company was well established, and in 1939 offered for demonstration the first of their new line of freight locomotives. This was a four-unit locomotive of 5,400 h.p. capable of separation into two locomotives of 2,700 h.p. each. Designated as a type "FT," it was the fore-runner of a large number of locomotives of this type. The locomotive was first tested on the Atchison, Topeka & Santa Fe Railway, who immediately ordered two locomotives, the first being delivered in 1941.

Streamline Locomotives

While the Electro-Motive Company was becoming established as a builder of diesel-electric locomotives, other locomotive companies were not idle. The American Locomotive Company built shunting, and streamlined passenger engines for a number of railways in the late 1930s. The Baldwin Locomotive Works also constructed shunting and streamline locomotives for various purposes. Undoubtedly, the second world war interfered to a considerable extent with the development of the diesel-electric locomotive. By order of the War Production Board the Electro-Motive Company was restricted to the construction of freight locomotives only, and the American Locomotive Company and Baldwin Locomotive Works were permitted to build 600 h.p. and 1,000 h.p. shunting engines only, designs were frozen and no improvements were permitted, and firms were not permitted to build diesel-electric passenger locomotives.

Output was entirely under control of the War Production Board and the Office of Defence Transportation. Diesel-electric locomotives were allotted by the latter department to railways whose needs were the greatest in the interests of the country as a whole, without regard to the desire of individual railways. Requirements which could not be satisfied by diesel-electric locomotives were fulfilled by the allotment of a suitable number of steam locomotives.

Postwar Period

After the end of the 1941-45 war, and the removal of restrictions, the construction of diesel-electric locomotives was resumed, with many improvements which were not permitted during the war. Before 1943, the principal builders of diesel-electric locomotives were the Electro-Motive Company, the Baldwin Locomotive Works and the American Locomotive Company. The third builder of steam locomotives, The Lima Locomotive Works, was not to enter the diesel field until 1949, and then only to a very limited extent, as this concern was absorbed by the Baldwin Locomotive Works the following year. Early in 1943 the Fairbanks-Morse Company entered the field of locomotive construction, when they built a 1,000 h.p. shunting locomotive, with a two-cycle, opposed-piston diesel engine, and with electrical equipment furnished by the Westinghouse Electric & Manufacturing Company. The locomotive was delivered to the Chicago, Milwaukee, St. Paul & Pacific Railroad on August 21, 1944, followed by 10 further locomotives for the same railway in 1945 and early 1946.

The General Electric Company accepted an order for 50 streamlined locomotives designed for use in either passenger or freight service, the gear ratio being installed to suit the service. While the locomotives were being built by the General Electric Company, Fairbanks-Morse prepared their plant at Beloit, Wisconsin, for the building of locomotives, following which, diesel-electric locomotives of all types were produced. The history of the diesel-electric locomotive appears to fall substantially into three phases. The first concerns the period before 1935, or before the entry of the General Motors Company into railway transportation.

Statistics taken from reports of the Interstate Commerce Commission showing the number of locomotives owned and leased by Class I railways are given in Table 1, Part 1, while Fig. 1 shows the change in motive power units from 1944 to 1956, and Fig. 2 shows the percentage of service by steam and diesel-electric locomotives over the same period, in shunting, passenger, and freight services.

The second phase takes in the period between 1936 and the end of the second world war, in 1945. This period was affected by the depression in the early 1930s, and also by the restrictions placed on the locomotive builders during the war. The use of diesel-electric locomotives, nevertheless, rose rapidly, so that at the close of 1941 there were 1,267 locomotive units reported to the Interstate Commerce Commission. In spite of war restrictions we find at the close of 1945, Class I railways reporting a total of 3,816 diesel-electric units in service; a threefold increase over 1941.

The third phase covers the period from the close of the war to the present time. From the close of 1946 to the end of 1952, there was a rather uniform annual increase in the number of diesel-electric locomotives reported. Between 1952 and 1955 the rate of increase was somewhat diminished.

Reasons for Reduction in Steam Power

The decline in the number of steam locomotives before 1935 obviously was not due to the increasing use of diesel-electric locomotives, nor was this a major factor until the close of the war.

Decline in traffic handled by the railways, improvement in capacity of the steam locomotive, and the retirement of many over-age, obsolete locomotives, were responsible for the decrease in the type of power up to the entry of America in the war. During the war there was, in fact, a slight increase in the number of steam locomotives reported. Following the war, steam locomotives were taken out of service, primarily because of the increased use of diesel-electric locomotives.

(To be continued)

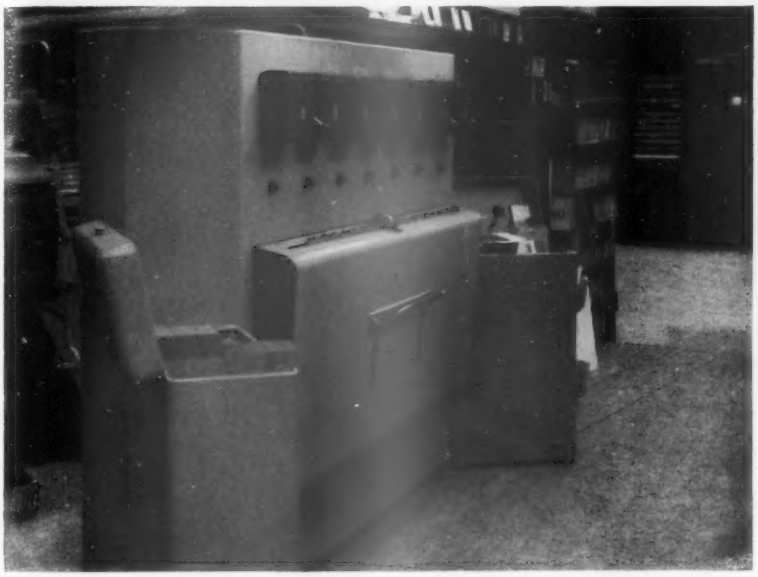
MORE VARIED MEALS ON BRITISH RAILWAYS.—Four-course luncheons, and a more varied afternoon tea, are to be served in the restaurant cars of British Railways. Revised charges for these meals, also for coffee, are announced by the British Transport Hotels and Catering Services. The new charges, which it is considered compare favourably with those in hotels and other catering establishments offering comparable meals, will come into force on June 17, and will be 9s. 6d. for a four-course luncheon (replacing the present three-course meal at 8s. 6d.); 3s. for afternoon tea, to include in addition the choice of sandwiches, bridge rolls, and so on, and a wider range of cakes or pastries (replacing the present more simple meal at 2s. 6d.); and 9d. for coffee, served without restriction after luncheon or dinner (instead of 6d. as at present; this increase is necessary to meet higher costs, including those of the high quality coffee now used). In augmenting the luncheon and tea meals, British Transport Hotels & Catering Services are concerned to raise the standard of restaurant car meals and service and are satisfied that passengers will not only welcome the more varied menus but will receive even better value than before. These revised menus and charges will apply in trains offering full restaurant car service; shorter menus and snacks will continue to be provided in buffet and cafeteria cars.

NEW PLATFORMS FOR STYAL LINE STATIONS.—Work began on June 11, on the reconstruction of the platforms at Mauldeth Road and East Didsbury stations preparatory to the electrification of the Manchester-Crewe section of the London Midland Region. The stations at Gatley and Burnage will also be dealt with similarly very shortly. East Didsbury and Burnage stations will be provided with new station buildings and all stations will have electric lighting. The wooden platforms will be replaced by pre-cast concrete platforms and be longer than the present ones to enable eight-car trains to be dealt with. The platforms will have solid panel concrete back fences. The cost of the work will be about £109,000.

RECONSTRUCTION OF RADCLIFFE CENTRAL STATION.—Work began on June 11, on the building of a new station at Radcliffe Central, London Midland Region. The scheme, which will cost about £100,000 will be completed in 18 months. There will be new offices on the ground floor, new platform buildings and awnings, modern lighting and heating, and a new lift. In addition, the subway is to be improved.

Train Indicators at Paris-Lyon

Comprehensive and individual indicators controlled from central point: automatic cancellation by trains themselves



Centralised control apparatus for train indicators. The perforated plates used can be seen in the open cabinets

THE French National Railways have installed an automatically operated train indicator system for the suburban services at Paris-Lyon. There is a centrally situated comprehensive indicator, which gives information regarding the next eight trains to depart, and individual indicators for each of the platforms normally used by suburban trains. At the entrance to the four platforms from which these trains most usually depart are indicators showing constantly, at the top, the platform letter. The departure time of the next train appears immediately below, this being followed by the names of the stations at which the train will stop, these being in illuminated letters on a dark green background.

At the foot of the indicator is a space on which appears, 20 seconds before the departure of the train, the words "*Le train part—Montee Interdite.*" (The train is leaving—do not board train). These words, in red illuminated letters, are flanked by red flashing lights; the station names are extinguished simultaneously.

A loudspeaker, worked by a magnetic tape, at the same time makes a similar announcement on the platform itself. The warning system as a whole comes into effect on the operation of a button switch by the train guard. Five other platforms which may be used at peak periods are provided with a simplified type of indicator.

The comprehensive indicator has eight columns, the next eight trains to depart being shown in chronological order from left to right. At the top of each column is shown the departure time, followed by the platform letter, and then the stations at which the train will stop. The station names are identical and in the same position in each column to facilitate consultation by passengers.

Control Equipment

At a central location there is control equipment to operate the individual and comprehensive indicators; the main-line indicators also are controlled from the same place. Individual switches are provided for each of seven platforms, two of the simplified indicators being manually operated. For each train there are two aluminium punched plates, one for the individual and one for the comprehensive indicator, appropriate holes being blocked out with special stoppers to indicate the time of departure and stations

(*Continued on page* 687)

Main departure indicator showing next eight trains to leave. To the left and right are individual platform indicators

Individual platform indicator with lower panel for announcing imminent departure

Three-Car Diesel Trains for British Railways

300-h.p. sets incorporating integral construction

British Railways three-car diesel-electric suburban set

DELIVERY is now being made of the three-car train-sets to British Railways built by the Birmingham Railway Carriage & Wagon Co. Ltd. in association with the Drewry Car Co. Ltd. These are made up of one motor car of A^3 type, one trailer car of D type, and one motor car of B^1 type. The complete unit provides seating accommodation for 24 first class and 160 second class passengers, and with guard's and luggage compartment of 30 cwt. capacity.

Engine Transmission

Power is provided by standard B.U.T. engine transmission sets comprising for each motor car, two 150-b.h.p. six-cylinder horizontal-type engines, each driving the inner axle of the adjacent bogie via a Wilson four-speed epicyclic gearbox, cardan shaft, and a spur-and-bevel final drive on the axle. The weight of the unit in running order is 86 tons made up as follows: A^3 motor car 31 tons, D trailer car 24 tons, and B^1 motor car 31 tons. Horse-power per ton of tare is thus about 7, and horse-power per ton fully laden with crew is about 6.

The layout of the A^3 motor car provides seating accommodation for 19 non-smoking and 33 smoking second class passengers, with a guard's and luggage compartment. In the D trailer car seating accommodation is for 12 first class, 33 smoking and 21 non-smoking second class passengers; a toilet compartment is also provided. In the B^1 motor car seating accommodation is for 12 first class and 54 second class passengers; a toilet compartment is also provided.

Tubular-frame seats in the first class compartments are upholstered in Dunlopillo and trimmed in uncut moquette of a pleasing blue shade with contrasting blue panels of Vynide in the seat frame and back panel, and are complete with armrests and headrolls. A harmonising blue carpet is provided on the floor over linoleum.

The second class seats are also tubular framed, upholstered in Dunlopillo and trimmed in cut and uncut moquette of maroon shade with contrasting grey-green panels of Vynide in the seat frame and back panels. Headrolls are provided but no armrests. The floor is covered with linoleum of a green shade. Parcel racks of light alloy, anodised in self-colour run the full length of the saloons. The saloons are finished in veneered plywood polished, the first class in rose zabrano and the second class in lacewood.

Vestibules

The screens at the entrance vestibules are of blockboard, veneered to match the saloons, and provided with armoured glass in the upper panels. The interior sliding doors are also of blockboard veneered in mahogany which matches the mahogany window framing in the bodyside windows and vestibule screens. British Railways standard bodyside windows with sliding ventilators are provided, and Beclawat full-drop balance windows are fitted to the entrance doors which open outwards. The toilet is finished in primrose yellow plastic with furnishings to match.

Generous use has been made of Fibreglass in the cars. In addition to the driving end canopy, the cab ceiling, front and side interior finish including the destination indicator box, and alarm valve covers, are of Fibreglass in a dove-grey shade, giving a pleasing and easily cleaned finish. In addition, the covers over the heater ducts at the vestibule are also in Fibreglass, in a shade to match the anodised aluminium kicking strips on the vestibule screens.

The interior of the cars are insulated against heat and noise by sprayed asbestos $\frac{1}{4}$ in. thick applied to the inside of side, end and roof sheeting and $\frac{3}{8}$ in. thick on the underside of the aluminium dovetail floor sheets. The floor sheets are covered with $1\frac{3}{16}$ in. thick cork on which the linoleum is laid. This gives further protection against transmission and track noise.

Construction

The bodies and underframes are built as an integral structure, the complete body and underframe being capable of carrying all the superimposed loads normally encountered in service, and a 200 per cent overload. The main body pillars are of mild steel pressed top-hat section 16 s.w.g. thick, with the flanges of the top-hat located against the outer skin, together with which they form hollow box-sections. They are tied together by the light and waist rails together with intermediate rails of 16 s.w.g. plate of angle and zed section, and by the $\frac{1}{4}$-in. thick plate cantrail. The main carlines are of similar section and thickness as the pillars and are tied together by purlins of shallower top-hat section.

The bodyside, end and roof plates are of 16 s.w.g. steel, and are stitch welded to the body framing on cast-iron jigs to minimise distortion and buckling of the panels. All joints between adjacent bodyside and body-end panels are welded and ground smooth after assembly to provide a completely flush exterior finish to the car sides and ends. The underframe is of conventional design of mild-steel rolled sections and plates, the members spaced to accommodate the power and transmission equipment, and fabricated by electric welding. Drawgear is to British Railways standards, and light alloy, Oleo hydraulic self-contained side buffers are fitted.

The bogies are of the conventional British Railways swing bolster type as fitted to other railcars, and are fitted

with British Timken roller-bearing axleboxes, and also lateral control bolster dampers. The motor car bogies carry the 22-in. vacuum cylinders and one bogie per trailer car carries the electric generator for lighting this car. British United Traction Limited are the suppliers of the power equipment and controls as already described which include auxiliary drives to a 150-amp. generator and two Clayton exhausters taken from the transmission by V-belts. An air compressor is mounted on each engine and supplies air for the electro-pneumatic controls.

Radiator drives are geared to the engine, the radiator being mounted at the side of the frame, and the fan is driven through a right-angle gearbox. The exhaust pipes are led under the frame and up to roof level at the trailing end of the car, two silencers being fitted to each engine to ensure quiet running. Controls of the latest type are fitted which incorporate many improvements found necessary in service with the earlier railcar sets. They are of the electro-pneumatic relay type, and enable multiple sets of units coupled indiscriminately to be driven from one cab. Brakes are of the Gresham & Craven quick-release vacuum type. Brake valves are fitted in each cab and guard's compartment and a handbrake is fitted in each cab.

Car heating is by S. Smith & Sons; the oil-burning heaters using fuel oil. Two heaters are provided to each car operating independent systems, one using fresh air from the outside, the other providing recirculating air, both have an Ozonair filter between the air intake and heater. Air is led to longitudinal ducts along the bodysides and distributed at floor level. Two entries are led through the luggage partition capable of being blanked off at the guard's discretion, a further feed is led to near the guard's seat. The drivers' cabs and toilets are also provided with feeds through the partition.

First class compartment, showing décor and seating arrangement

De-misting and de-frosting is by means of warm air from the heaters, and cool air from a grille in front of the cab led to a mixing chamber provided with a flap valve to allow control of the temperature, the mixing chamber being provided with an electric-driven fan which blows the air to the distributing duct at the bottom of the driver's window. Lighting in the saloons is by means of 60-W. 24 V. lamps, power being provided by a J. Stone & Co. (Deptford) Ltd. 150-amp. Tonum light generator. Accumulators are of the standard British Railways A2 type with lead acid cells of 440 amp/hr. capacity. Illuminated destination and route indicator boxes are provided at driving ends.

Electric buzzers provide communication between driver and guard, while an electric bell system warns both driver and guard of fire at engines. A Smith-Stone speed indicator is fitted on the driver's desk and a Smith-Stone distance counter is fitted to one axlebox on each motor car. The layout of the controls in the driver's cab is similar to that of other British Railways railcar units, the windows of the cab being of ¼-in. armoured glass.

Sub-contractors include:—

British United Traction Limited	Power equipment transmission and controls
Beckett, Laycock & Wilkinson Limited	Windows
British Timken Limited ..	Roller axle-boxes
Gresham & Craven Limited ..	Vacuum brake equipment
S. Smith & Sons (England), Ltd.	Car heating equipment
J. Stone & Co. (Deptford) Ltd.	Train lighting and generators
Smith's Industrial Instruments Limited	Speedometer equipment
Clayton Dewandre Co. Ltd. ..	Vacuum exhausting equipment

Interior of second class compartment

Train Indicators at Paris-Lyon

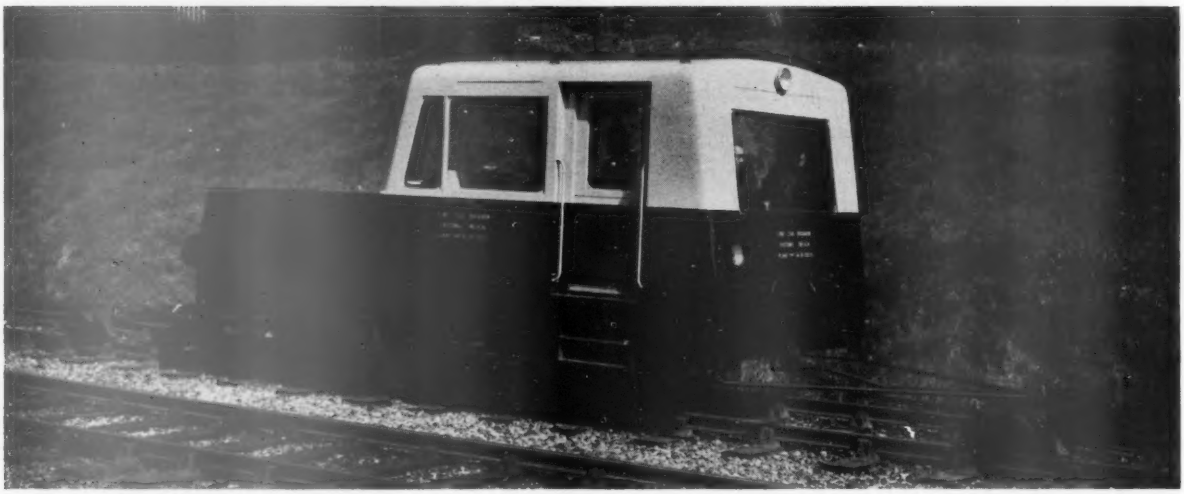
(*Concluded from page* 685)

served. These are inserted in the appropriate place in the control equipment and, on operation of the switch, the correct information appears on the indicators. In the case of the comprehensive indicator, the plate is put into an aluminium holder, with identical holes, before being inserted in the machine, the holder providing space for a platform indication.

The details on any individual indicator are automatically cancelled by a trip switch as a train departs, the controller then removing the appropriate plate and inserting another. With the comprehensive indicator the controller releases all the plates and can move them, together with a ninth plate already prepared at the extreme right, one space to the left, thus ensuring suitable alteration, in chronological order, of the comprehensive indicator.

Self-Propelled Track Recorder

Comprehensive record of irregularities by machine installed in the Eastern Region



Self-propelled track-recording trolley used in the Eastern Region, British Railways

A TRACK recording trolley, the first of its type on British Railways, is being used by the civil engineering department, Eastern Region, for detecting and recording track irregularities. Manufactured by Matisa Equipment Limited, it is self-propelled, weighs some eight tons, and is powered by a Chevrolet 65-h.p. petrol engine. As the vehicle travels along the track a series of probes and wheel flanges in contact with the rail surfaces communicate any irregularities to the recording table by means of wire cables and mechanical linkage. Tnese irregularities are permanently recorded by means of ball-point pens operating on a roll of special paper; the speed of movement is dependent on the speed of the trolley. Records obtained include gauge variation, superelevation, and alignment.

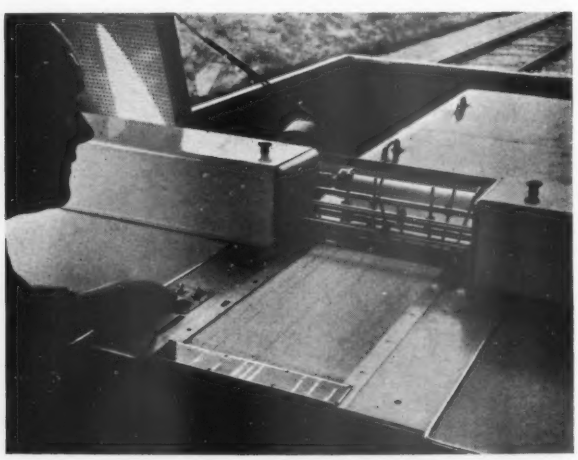
The extent of the track irregularity is found by means of direct measurement on the chart produced on the recording table. Lineside objects such as mileposts, station platforms, and bridges, which are used for identification purposes, are recorded by pressing a button as the trolley passes them. Speeds during recording are up to 20 m.p.h., but up to 50 m.p.h. can be attained when not recording.

Staff Required

Normally, a crew of five is carried, including a driver and pilot, technical assistant, an inspector in charge of the trolley, and a man to mark lineside identification objects; when necessary a guard also travels. Besides the regular crew, it is usual to have on board one or more permanent way inspectors responsible for maintenance where recordings are being taken, who take note of any repair work necessary, and institute remedial measures with a minimum of delay. Records are studied by the District Engineer who is able to use them for planning maintenance work.

Since first brought into use, many detailed surveys have been carried out. A further trolley will eventually be brought into service in the Region, when all running lines will be surveyed at least once a year, while the more important main lines will be covered several times during 12 months.

One of the outriggers, showing the mechanical linkage, and part of the mechanism



The table and mechanism, showing the record made of the actual condition of the track

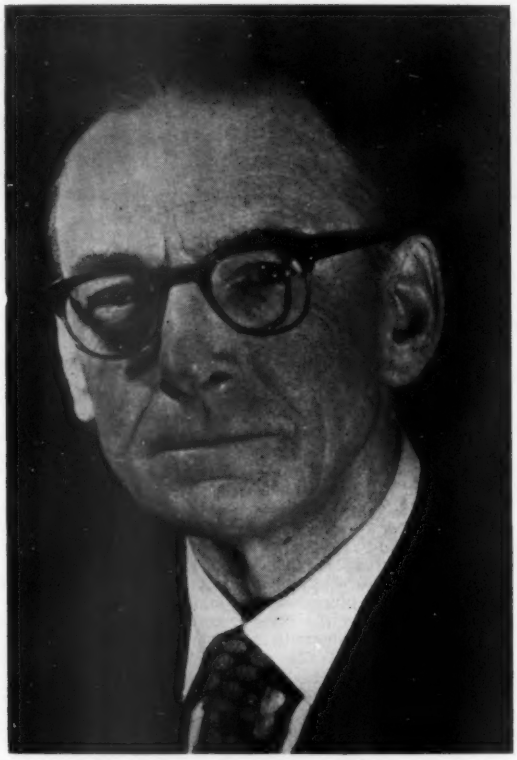
RAILWAY NEWS SECTION

PERSONAL

Sir Arthur Kirby, retiring General Manager of East African Railways & Harbours, has been appointed to succeed Mr. V. G. Matthews as Commissioner for East Africa in London when the latter retires in January, 1958.

Mr. Collingwood Cooper, M.B.E., Regional Establishment & Staff Officer, North Eastern Region, British Railways, who, as recorded in our June 7 issue, retired on June 8, after more than 50 years of service, began his railway career in Hull in 1906 with the former North Eastern Railway. After serving with H.M. Forces in France in the 1914-18 war, he took up a position in the Goods Manager's and Passenger Manager's Joint Staff Section at the company's headquarters in York. While in this position Mr. Cooper acted as Welfare Adviser to railway staff returning from the Forces. In 1923, following amalgamation, he was appointed to the Chief General Manager's Office of the London & North Eastern Railway in London. While in this position he was Secretary of the Sectional Staff Councils covering all grades of the former L.N.E.R. staff. In 1935 he was appointed Staff Assistant to the Operating Superintendent, North Eastern Area, York, and, three years later, took charge of staff work in the Goods Manager's, Passenger Manager's and Motive Power Superintendent's departments. In 1948, after nationalisation, he became Regional Establishment & Staff Officer, North Eastern Region, the position from which he now retires. Mr. Cooper has represented the North Eastern Region on many All-Line Committees, negotiating at national level with trade unions on salaried and wages staff matters. He has also been Chairman of various staff and welfare committees in the North Eastern Region. He was a trustee of the North Eastern Railway Cottage Homes & Benefit Fund and a representative of British Railways on the St. John Ambulance Association, London. In his capacity as Regional Establishment & Staff Officer, he was responsible for all staff matters affecting approximately 70,000 railwaymen.

Mr. Collingwood Cooper
Regional Establishment & Staff Officer, N.E. Region, 1948-57



Mr. A. W. J. Dymond
Appointed Stores Superintendent, Western Region

Mr. Edward W. Arkle, Chief Commercial Manager, London Midland Region, British Railways, has been appointed Director of Traffic Services for that Region.

Mr. L. W. Cox, Chief Operating Superintendent, London Midland Region, British Railways, has been appointed Assistant General Manager (Administration) of that Region.

Consequent on the retirement of Mr. R. W. Meredith, Mechanical Engineer, Great Northern Railway Board, the following appointments have been made, effective from June 1: Mr. H. E. Wilson as Mechanical Engineer, Mr. N. C. Carter as Deputy Mechanical Engineer.

Mr. A. W. J. Dymond, B.Sc. (Eng.) Hons. M.I.C.E., M.I.Mech.E., Joint Assistant to the Chief Mechanical and Electrical and Carriage & Wagon Engineers, Western Region, who, as recorded in our May 31 issue, has been appointed Stores Superintendent, of that Region received his training on the Taff Vale Railway and entered Swindon Drawing Office in 1922. After being appointed Assistant Divisional Locomotive, Carriage & Wagon Superintendent at Cardiff he became Assistant to the Locomotive Running Superintendent of the Great Western Railway at Swindon. In July, 1945, Mr. Dymond was appointed Assistant to the Chief Mechanical Engineer, Great Western Railway, and, since that date, has been engaged on special duties such as the coal-oil conversion project for steam locomotives; the two Great Western gas turbine locomotives and, in recent years, on matters of productivity, including materials handling in works. He is a member of Council of the Institution of Locomotive Engineers, and has presented papers on railway subjects to the Institution of Mechanical and Locomotive Engineers. He has also lectured on the continent. Mr. Dymond has wide local interests in Swindon, is an Alderman of the Borough Council and has occupied the chair of a number of committees.

Mr. A. B. B. Valentine has been appointed a director of the Channel Tunnel Co. Ltd. A member of the British Transport Com-

Mr. K. A. Kindon

Appointed Traffic Manager, Tees-side, N.E. Region

Mr. E. E. Cowell

Appointed Traffic Manager, West Riding, N.E. Region

Mr. I. G. MacGregor

Appointed Traffic Manager, Hull & York N.E. Region

mission, Mr. Valentine is also a director of the Birmingham & Midland Omnibus Co. Ltd. Mr. J. W. Webb has resigned from the board of the Channel Tunnel Co. Ltd.

Mr. K. A. Kindon, District Commercial Manager, Middlesbrough, who, as recorded in our May 24 issue, has been appointed Traffic Manager, Tees-side, North Eastern Region, British Railways, with headquarters at Darlington, was educated at Southgate County School and London University. He joined the staff of the Chief Goods Manager, Great Central Railway, at Marylebone in 1918. After filling various junior positions he was one of the five successful candidates in the first competitive examination for the selection of Traffic Apprentices from the staff in 1924. After the completion of his training he was appointed a supervisor at Kings Cross Goods Depot, and, in 1933, went to Liverpool as Assistant to the District Goods Manager. When the Goods Manager's Research Section was inaugurated in London in 1936 he was selected to take charge of this new work. Promotion as Assistant to District Manager, Nottingham, came in 1939, but immediately before the outbreak of war Mr. Kindon was loaned to the Ministry of Food and, after returning to railway service, was appointed Assistant District Goods & Passenger Manager at Nottingham. He became Assistant London City Manager in November, 1946, and, in November the following year, took up the position of London Suburban District Goods Manager. Mr. Kindon became District Passenger Superintendent, Sheffield, in November, 1950, and held that position until September, 1953, when he became District Commercial Manager at Middlesbrough, the position he now leaves.

Mr. E. E. Cowell, District Operating Superintendent, Newcastle, who, as recorded in our May 24 issue, has been appointed Traffic Manager, West Riding, Yorks, North Eastern Region, British Railways, with headquarters at Leeds, joined the former London & North Eastern Railway at Norwich in 1924 as a Junior Clerk. He occupied positions at Norwich Thorpe, Kings Cross, and Bow Creek before gaining a Traffic Apprenticeship by competitive examination in 1932. Mr. Cowell was transferred to the North Eastern Area for training on completion of which he was made Chief Clerk in the Docks Superintendent's Office, Western Docks, Hull, in January, 1937. The following year he became Chief Passenger Trains Clerk, District Operating Superintendent's Office, Darlington, and, in November, 1940, Deputy Chief Controller in the District Control at Darlington. In 1943 he was appointed Deputy Chief Controller, Headquarters Central Control, York; in 1944, Head of Superintendent's, Passenger Manager's and Locomotive Power Superintendent's Joint Passenger Trains Section, York, and, in 1946, Head of Superintendent's and Locomotive Running Superintendent's Joint Works and Outdoor Section, York. Mr. Cowell became Assistant District Operating Superintendent, York, in September, 1948, and in November, 1950, District Operating Superintendent, Sunderland. He was appointed District Operating Superintendent at Newcastle in January, 1956.

Mr. P. Stephenson, temporary Assistant to the General Manager (Administration), North Eastern Region, British Railways, since October last year, has been appointed to succeed Mr. Collingwood Cooper, whose retirement was recently recorded, as Regional Establishment & Staff Officer of that Region.

Mr. R. W. Rose, District Commercial Manager, Edinburgh, Scottish Region, British Railways, is to retire on the 30th of this month.

Mr. C. H. Diggory, General Assistant to the Chief Civil Engineer, Western Region, British Railways, has been appointed District Engineer, Shrewsbury, Western Region.

The following appointments have been announced by the Tilling Group:—

Mr. T. W. H. Gailey, Traffic Manager, Bristol Tramways & Carriage Co. Ltd. and of other companies in that group, has also been appointed Assistant General Manager of these companies.

Mr. E. Roberts, Traffic Manager, Crosville Motor Services Limited, has also been appointed Assistant General Manager of that company.

Mr. I. G. MacGregor, District Operating Superintendent, Darlington, who, as recorded in our May 24 issue, has been appointed Traffic Manager, Hull & York, North Eastern Region, British Railways, with headquarters at Hull, joined the London & North Eastern Railway as a Traffic Apprentice in 1931. On completion of his training in December, 1934, he became Supernumerary Assistant to the District Superintendent, Stratford, and, in 1935, took up a similar appointment at Doncaster. In September, 1936, he became Yardmaster, Woodford & Hinton, and, a year later, was made Deputy Chief Controller, Superintendent's Office, Liverpool Street, a position he held until August, 1939, from which time he was absent on war service until 1945. While in the Forces Mr. MacGregor was recorded as appointed Assistant to the District Superintendent, Lincoln (in 1944), and Assistant to the District Superintendent, Norwich (in 1945), the latter position being that to which he returned from the services in 1945. In August, 1946, he became Assistant District Superintendent, Kings Cross, and on September 6, 1949, District Superintendent, Lincoln, which position he vacated in July, 1950, on appointment as District Operating Superintendent at Darlington.

Mr. W. M. Dravers has been appointed to the board of the South Wales Transport Co. Ltd. in place of Mr. P. G. Stone Clark, who did not seek re-election.

Mr. R. J. Ellery has been appointed a director of Maidstone & District Motor Services Limited in place of Mr. P. G. Stone Clark, who has left the board.

The following appointments have been announced by British Road Services:—

Mr. F. R. Parkin, North Western Area Manager, B.R.S. (Parcels) Limited, to be Assistant, South Eastern Area Manager, London, B.R.S. (Parcels) Limited.

Mr. W. H. Evans, South Western Area Manager, B.R.S. (Parcels) Limited, Bournemouth, to be North Western Area Manager, Manchester, B.R.S. (Parcels) Limited.

The Rt. Hon. Lord Moynihan has joined the board of Simms Motor Units Limited.

The following administrative staff changes have been announced by Victorian Railways, Australia: Mr. J. L. Timewell, Secretary, has retired, and has been succeeded by Mr. P. Farnan. Mr. L. G. David succeeds Mr. Farnan as Chairman of the Staff Board.

Colonel S. H. Bingham, Retd., Consulting Engineer, leaves New York for London tomorrow, June 15, on a business visit. He will be in London until June 22, when he will visit Paris and, later, Stockholm.

Dr. jur. Fritz Schelp has been reappointed a member of the Board of Directorate of the German Federal Railway.

The honorary degree of Doctor of Laws has been conferred by the University of Manitoba on Mr. Henry S. Wingate, President of the International Nickel Company of Canada Limited.

Mr. E. G. Grinham, who has had many years of experience in the automobile industry, has been retained as a consultant to the Dunlop Rubber Co. Ltd. and its subsidiary companies in connection with engineering products, including road and rail vehicle suspensions and brakes.

Transport Users' Consultative Committee for Scotland

A new Transport Users' Consultative Committee for Scotland has been appointed by the Minister of Transport & Civil Aviation. Sir John Banks has been appointed Chairman of the Committee, which will serve until April 30, 1960. Names of other members are given below, those of new members being marked with an asterisk. Two appointments to represent industry and one to represent local authorities have still to be made.

Representing Agriculture

Messrs. J. Marshall, Past President of the National Farmers' Union of Scotland; A. C. Barr,* Member of N.F.U. Council.

Representing Industry and Commerce

Messrs. W. Mackenzie, Managing Director, McGruther & Marshall Limited; J. F. Carnegie,* Director, Brownlee & Co. Ltd.; H. Adamson, National Coal Board; J. Aitchison, Director, Scottish C.S.W. Limited.

Representing Shipping

Mr. J. Urquhart, Director, J. Hay & Sons Limited.

Representing Labour

Messrs. T. B. Meikle, Scottish Secretary of the Transport & General Workers' Union; F. Donachy, National Union of Railwaymen.

Representing Local Authorities

Councillor J. Chalmers Brown, Chairman of Edinburgh Corporation Transport Committee; Mr. F. W. Walker,* Convener of Inverness County Council; the Rev. P. Craik MacQuoid,* member of Aberdeen County Council; Provost G. Fraser, J.P., Hawick; Provost D. Cairns,* Kilmarnock.

Representing Transport

Captain Sir Ian Bolton, Member, British Transport Commission; Messrs. J. B. Hastie, Divisional Manager, British Road Services (Scotland); J. Ness, Chief Regional Manager, British Road Services (Scotland); J. Amos, Chairman, Highland Omnibuses Limited.

Additional Appointments

Mrs. M. J. Macdonald,* President, Scottish Standing Committee of the National Council of Women of Great Britain and Chairman, North-East Federation of Townswomen's Guilds; Miss A. McKenzie,* a former Chairman of the Scottish Women's Rural Institutes.

Mr. S. H. Newman has been appointed Chairman of the Expert Tool & Case Hardening Co. Ltd. in place of Mr. A. H. Redfern, who has retired after 15 years association with the company.

Mr. Martin M. Polson has been appointed Technical Engineering Adviser (Retaining Ring Division) of Geo. Salter & Co. Ltd. The position is a new one in the company.

Dr. Francis C. Toy, Director of the Shirley Institute, Manchester, 1944-55, and a Past President of the Institute of Physics, has been engaged by Small & Parkes Limited in an advisory capacity.

The following appointments have been announced by Small & Parkes Limited: Mr. W. A. Parkes to be Manager of the South Western Area; Mr. J. K. Blamey to be Traffic Manager (a new appointment); Mr. H. Sutcliffe to succeed Mr. Blamey as Sales Manager of the Belting & Webbng Department.

The following appointments have been announced by Davey, Paxman & Co. Ltd.: Mr. D. M. Pearce to be Deputy Chief Engineer; Dr. D. J. Allen-Williams to be Chief Research Engineer; Mr. E. J. Cove to be Chief Diesel Engineer; Mr. W. R. Dingle to be Chief Design & Development Engineer.

Sir Walter Puckey has joined the board of Black & Decker Limited. Mr. F. W. McCartney, Assistant General Manager, becomes Assistant Managing Director, and Mr. W. O. Bell, Acting Production Director, becomes Production Director.

Mr. G. A. R. Mead, Joint Managing Director of the Skefko Ball Bearing Co. Ltd., wants to be relieved of all executive responsibilities with the company at the conclusion of 40 years of service in March, 1959. As a consequence and to facilitate any special administrative measures or changes which may become necessary, Mr. Mead will relinquish his position as Joint Managing Director on September 1 this year. He will continue as an executive director until March, 1959, and, from that date, will remain a member of the board. Mr. C. U. Magnusson will become sole Managing Director from September 1.

Birthday Honours List

The following is an initial selection of Birthday Honours of transport interest:—

K.B.E.

Captain Sir Ian Bolton, Bt., O.B.E., Chairman, Scottish Area Board, B.T.C.

Knights Bachelor

Mr. C. J. Geddes, C.B.E., Member, General Council, T.U.C., and a part-time Member of the L.T.E.

Mr. A. T. S. Zealley, Chairman, Remploy Limited.

C.B.E.

Mr. C. K. Bird, M.M., General Manager, Eastern Region, British Railways.

Mr. J. W. Campbell, Financial Adviser to the Iron & Steel Holding & Realisation Agency.

Mr. E. W. Godfrey, O.B.E., Assistant Secretary, Ministry of Transport & Civil Aviation.

Mr. H. W. Grimmitt, Chief Engineering Inspector, Ministry of Power.

Mr. J. G. Pearce, O.B.E., Director of Research, British Cast Iron Research Association.

Mr. D. G. Sopwith, Director of Mechanical Engineering Research, Department of Scientific & Industrial Research.

Mr. C. M. Vignoles, O.B.E., Managing Director, Shell-Mex & B.P. Limited.

Mr. J. Wright, O.B.E., Director, Dunlop Rubber Co. Ltd.

B.E.M.

Mr. W. C. Burford, Locomotive Driver, Grantham, Eastern Region, British Railways.

Presentation to Mr. A. Forbes Smith

Mr. A. Forbes Smith, retiring Chief Stores Officer, British Transport Commission, receiving a presentation on May 28, from Mr. J. R. Pike, President of the Senior Officers' Mess, B.T.C. Headquarters

NEW EQUIPMENT AND PROCESSES

Mechanised Ticket Issuing

RECENTLY installed on British Railways at the Doncaster Booking Office are three Multiprinter ticket issuing machines of new design.

The machines are compact and can print and issue, from plates enclosed within the machine, up to 1,260 different tickets, at the same time making a statistical record of all issues.

The Multiprinter consists of a rectangular shaped cabinet, approximate dimensions 5 ft. wide, 2 ft. 7 in. high, 1 ft. 8 in. deep, above which is an internally-illuminated glass-fronted index of destinations arranged in echelon, each having a translucent coloured plastic button to indicate the type of ticket. Mounted on the main cabinet but moving freely is the printing carriage enclosing a totaliser and record strip. At the front of the cabinet are containers of various coloured plain cards for the differing classes and types of bookings.

A cursor moves across the index in response to movement of the printing carriage and when this rests on the destination indication the carriage is immediately above the appropriate plate and ready to print the ticket indicated.

The operator then selects a plain card of the correct colour which he inserts into a slot in the carriage. This is re-delivered to the operator immediately as a printed ticket complete with date and progressive number. The machine simultaneously records the fare, printing plate number and ticket number. It also increases a debit totaliser by the amount of the fare and advances a statistical counter exclusive to the ticket issued.

The whole operation takes less than three seconds. All vital parts are inaccessible to unauthorised persons and utmost security is provided. The machines can be locked when not in use and the blank cards have no value until printed. The insertion of a reading card at the commencement and again at completion of a turn of duty gives the booking clerk the totaliser debits and by substraction the debit for the shift is quickly obtained. Although designed for electric operation, in the case of power failure the machine may be worked by hand.

Further details may be obtained from the manufacturer, Westinghouse Garrard Ticket Machines Limited, Langley Road, Chippenham, Wilts.

Magnetic Coolant Separator

AN addition to the range of Rapid magnetic equipment is the Coolant Separator which is claimed to be the first all-British machine to be produced by specialists in magnetic engineering.

The unit is designed to remove impurities, such as sludge, from suds and other coolants, used in machine cutting operations.

The contaminated liquid is fed through a restricted area between the separator housing and the stainless steel cover of the magnetic drum. The magnetic drum, which is energised by Alcomax permanent magnets fitted around its periphery, rotates in the opposite direction to the flow of liquid.

Ferrous particles in the liquid are thus attracted to the cover of the drum, and discharged on to a chute at the front of the separator after passing under a roller which squeezes out the liquid remaining in the sludge. The cleaned liquid flows from side outlets located near the front of the separator, and is then ready to be re-circulated. At present the units are available in a range of capacities from 10 gal. per min. to approximately 40 gal. per min.

Magnetically-attracted particles which adhere to the drum face form a mechanical filter which also collects non-magnetic abrasive particles. For ease of cleaning, plugs are suitably located on the machine where sludge may collect. This equipment can also be adapted for extracting ferrous impurities from other liquids such as lubricating oils.

Price and delivery details may be obtained from the manufacturer, Rapid Magnetic Machines Limited, Lombard Street, Birmingham, 12.

Coach Cleaning Mop

SUITABLE for cleaning rolling stock surfaces and windows, both inside and out, the County mop is now available in this country. The head of the mop is made from full oil-tanned chamois and is fitted on the end of a 3-ft. long wooden handle, and set at a convenient angle for efficient use.

For washing down, the head will hold a large quantity of water that can be easily wrung out before "leathering off."

The retail price of the County mop is 9.s 11d. Details, including delivery, may be obtained from the manufacturer, the County Chamois Co. Ltd., Rocky Lane, Aston Cross, Birmingham, 6.

Mobile Pressure Greaser

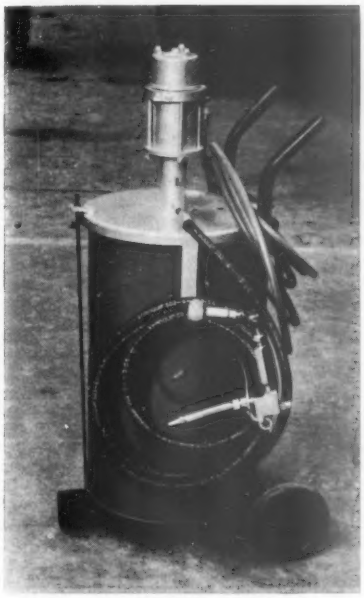
THE Type 205GB/P/P mobile high-pressure greaser recently introduced has been put into operation by the Road Motor Engineers Departments of the Eastern and Southern Regions of British Railways, for general greasing and chassis lubrication of road vehicles.

It dispenses grease under pressure direct from factory-filled 1-cwt. kegs and, for this purpose, it is fitted with a high-pressure pump which is also equipped with a pressure plate for dealing with extra heavy greases. It operates on an applied air pressure of 80 or 150 lb. per sq. in.

The keg, when empty, is replaced quite simply by unscrewing the securing wing nuts and then lifting away the pump.

The unit has two 8-in. dia. rubber tyres. It is supplied complete with a set of adaptors for all nipple types together with a 15-ft. length of $\frac{1}{4}$-in. bore grease hose which terminates in a special lightweight grease pistol, and a 20-ft. length of air hose for connection to the air supply. Overall dimensions of the unit are: height 38 in.; width 20 in.; and depth 20 in.

Delivery is six weeks, and the price is £58 5s. The greaser is marketed in this



country by Wakefield-Dick Industrial Oils Limited, 67, Grosvenor Street, London, W.1, for the manufacturer, C. C. Wakefield & Co. Ltd.

Portable Greasing Unit

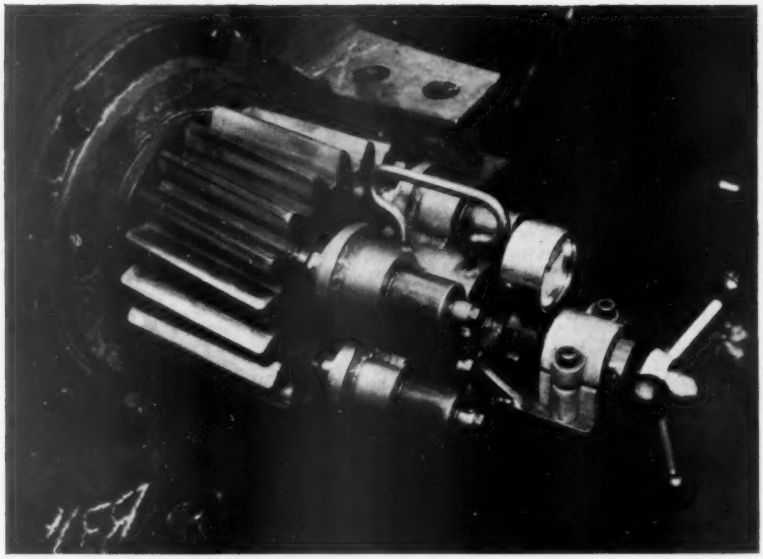
APPLICATIONS of the Multigreasor, a recent addition to the range of Centralube lubrication equipment, which is a portable high-pressure greasing plant, include the lubrication of diesel locomotives and railcars, road motor vehicles, and general works machinery.

The unit consists of a pump driven normally by an electric motor although petrol or diesel power units can be accommodated. The power and pumping components are mounted on a manœuvrable trolley. It is designed for the quick lubrication of a large number of grease nipples which are either stationary or moving. Connected to the pump is a flexible high-pressure pipe, at the end of which is a grease gun. Between the flexible pressure pipe and the pump are located a return valve and pressure gauge. The return valve can be set to various pressures, the maximum recommended working pressure being 1,500 lb. per sq. in.

The grease pump is of the swashplate-driven type which, depending on output required, can be of 24- or 12-plunger pattern. As the grease gun lever is released, the pressure in the pumping system builds up, the pre-set return pressure, grease being immediately available at the gun, at the working pressure.

The two sizes available give a maximum output of 25 and 50 lb. per hr., that is, 3·5 or 7 gm. per sec. respectively. Pump containers are available to hold 33 and 66 lb. The trolleys can be supplied with or without rubber wheels.

The manufacturer points out that the same lubricators can also be used as stationary units and can then be driven either by their own motor, or by a rotating shaft which may be already in existence. Stationary installations can be used for branched high-pressure grease systems to give a number of grease points in any workshop or properly spaced.



The price of the unit may vary from £150 to £280 depending on the size, method of drive and so on. Other details, including delivery, can be obtained from the manufacturer, Centralube Limited, Great Western Trading Estate, Park Royal Road, London, N.W.10.

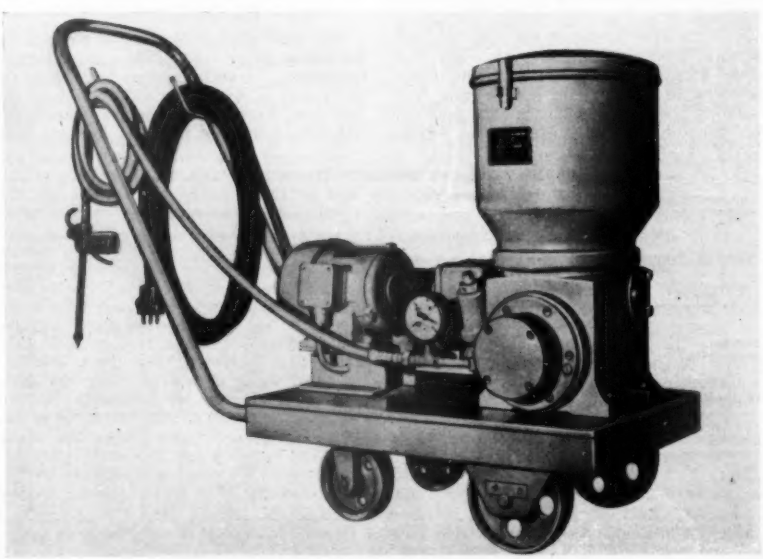
L.T.E. Portable Hydraulic Pinion Press

London Transport engineering staff have developed a press for fitting traction motor pinions, which with appropriate adaptors is suitable for all types of traction motors used in London Transport trains. This supersedes the previous practice of driving home the pinion with a lead or copper hammer after heating, which has been suspected of causing damage to the armature roller bearings. The hydraulic press ensures that the thrust on the shaft is not transferred to the bearings, and that the driving force is applied quite evenly to the face of the pinion.

The press consists of adaptor socket, screw-operated hand pump, and four hydraulic plungers. It is used in conjunction with an armature shaft adaptor. The assembly consists of a plate carrying the adaptor socket and four bosses arranged radially to locate the four hydraulic plungers. A bracket attached to the back of the adaptor socket carries a hand pump capable of producing a pressure of 2,500 lb. per sq. in. and a maximum thrust of 2·7 tons.

The adaptor has a short shaft drilled for a tommy bar, with a threaded socket at one end and a bayonet fixture at the other which engages with a pin inside the adaptor socket. The adaptor is first screwed to the armature shaft and the heated pinion is then offered up to the shaft and pressure applied by hand pump. After the pinion has cooled the pressure is released and the press and adaptor removed.

The hydraulic units, including the hand pump, were supplied by Power Jacks Limited.



London Midland Region Timetable Reorganisation

Complete recasting of schedules in Midland Division

From June 17 a complete reorganisation is to take place in the main line timetables of the Midland Division, London Midland Region, restoring them in very large measure to prewar standards, except north of Nottingham. Between here and Clay Cross there are five colliery subsidences requiring speed restrictions of from 15 to 20 m.p.h., and between Swinton and Leeds six, one each of 15 and 20 m.p.h. and the remainder of 30-45 m.p.h., which have a serious effect on the running; but elsewhere the 90 m.p.h. maximum now permitted from Hendon to Trent and Nottingham, and 75 to 80 m.p.h. in general elsewhere (apart from local restrictions) have made possibly a large number of point-to-point schedules at 60 m.p.h. from start to stop or but slightly under. Standardised starting times have reappeared, from St. Pancras at 15 min. past the hr. from 8.15 a.m. to 4.15 p.m. inclusive (except 1.15) and at 8.15 and 9.15 p.m. to Leicester or Nottingham and beyond, and at 10.25 a.m., 12.25, 2.25 and 4.25 p.m. to Manchester; also at 7.25 and 10.25 a.m., 12.25, 2.25, 3.25, and 4.25 p.m. from Manchester to Derby and beyond.

As to principal changes, a new 8.15 a.m. from St. Pancras will run to Nottingham instead of Manchester, with an additional call at Bedford; the previous 8.15 will start at 7.55 a.m. and run to Leicester and Manchester, arriving at 11.45 a.m. instead of 1.5 p.m., an acceleration of 60 min. The 9 a.m. from St. Pancras to Edinburgh (the prewar "Thames-Forth Express," and now to be called the "Waverley") will start 15 min. later, omit the Luton and Kettering stops, run the 123.5 miles to Nottingham in 124 min., and reach Sheffield 7 min. earlier, at 12.29 p.m., and Carlisle 25 min. earlier, at 4.2 p.m., a 40 min. acceleration. The 10 a.m. "Thames-Clyde Express" will leave at 10.15, and reach Leicester at 11.58 a.m., Sheffield at 1.26 p.m. and Carlisle at 4.58 p.m., 3 min. earlier; this will be followed by the 10.25 (previously 10.15) a.m. down Manchester calling additionally at Luton and accelerated 9 min.

The 2.25 p.m. down Manchester (previously 2.15), with a 99 min. non-stop run to Leicester and ceasing to call at Chinley, will reach Manchester at 6.9 p.m., in 3 hr. 44 min. from London, 31 min. less than now. There is to be a new 4.15 p.m. down, non-stop to Nottingham in 126 min., and reaching Sheffield at 7.32 p.m.; the previous 4.15 (now 4.25) p.m. to Manchester will be speeded up by 24 min., despite an additional stop at Loughborough, arriving in Manchester at 8.36 p.m.

The early morning up service will be transformed. Leicester will have an exclusive 99 min. non-stop to St. Pancras at 8.26 a.m., due 10.5 a.m. This will be followed by the 7.5 a.m. (now 7.2) from Sheffield, running via Derby (depart 8 a.m.) instead of Nottingham, and thence non-stop to St. Pancras, arriving at 10.18 a.m. Nottingham will have its own 8.15 a.m. to Manton and St. Pancras, arriving at 10.25 a.m. The 7.20 a.m. from Manchester to London will leave 5 min. later, and arrive 18 min. earlier, at 11.15 a.m., ceasing to call at Luton and running up from Leicester in 99 min. The present 7.20 a.m. from Bradford and 9.13 a.m. from Sheffield will have their workings transposed, the latter starting at 8.33 a.m. and being the fast train to Leicester, Luton and London, with an arrival at 11.42 a.m., while the Bradford train will become the semi-fast from Sheffield at 9 a.m. via Nottingham, arriving at 12.50 p.m.

A greatly accelerated up Manchester train will be the present 4 p.m., starting at 4.25 and reaching St. Pancras 23 min. earlier, at 8.15 p.m., a total gain of 48 min. The 9.20 a.m. "Thames-Forth" from Glasgow will be into London 10 min. earlier, at 7 p.m., and the 10.5 a.m. from Edinburgh 27 min. earlier, at 7.48 p.m., the latter non-stop from Nottingham in 123 min. Chief among other Midland alterations will be the acceleration of the southbound "Devonian," which will start from Bradford at 9.50 instead of 9.25 a.m., and Leeds at 10.20 instead of 9.56 a.m., cease to call at Normanton, Cudworth, Rotherham, Droitwich and Worcester, and reach Bristol at 3.47 p.m., 8 min, earlier; on Saturdays this train will have no publicly advertised stop between Leeds and Bristol. The 8.15 a.m. from Newcastle to Cardiff and Bristol will be divided daily from York, the Bristol section starting from York at 9.20 instead of 10 a.m., running via Worcester and arriving at 3.28 instead of 3.55 p.m., while the main train will run to Cardiff.

Refreshment Cars

The only discernible loss is that of refreshment car facilities on certain expresses. No restaurant or buffet cars are to be run in such important trains as the 2.25 p.m. from St. Pancras to Manchester (the fastest train of the day), the 3.15 p.m. to Sheffield, and the 6.50 p.m. from St. Pancras to Manchester, nor on the 7.25 a.m. from Manchester, the 8.26 a.m. from Leicester and the 1.48 p.m. from Sheffield to St. Pancras—a lack that should certainly be remedied in later timetables, especially on the London-Manchester run.

The annexed table compares the fastest and average times between St. Pancras and the most important provincial centres, as well as the number of fast trains operating in 1956 and 1957, and gives a clear picture of the extent of this praiseworthy timetable improvement.

ACCELERATED MIDLAND DIVISION TRAIN SERVICES, L.M.R.

Summer Timetables, 1956 and 1957

From St. Pancras to	Distance	Fastest time		Number of trains and average time				Reduction in average time
		1956	1957	1956		1957		
	Miles	Min.	Min.	No.	Min.	No.	Min.	Min.
Leicester	99·1	108	99	8	120	9	105	15
Nottingham	123·5	136	124	7	147	7	131	16
Derby	128·5	140	133	7	168	8	145	23
Sheffield	158·5	191	187	8	209½	8	195	14½
Manchester	189·2	255	224	4	270	6	241	29
To St. Pancras from								
Leicester	99·1	102	99	9	120	10	105	15
Nottingham	123·5	135	123	7	158	8	146	12
Derby	128·5	153	135	6	170½	7	142	28½
Sheffield	158·5	196	189	7	213½	7	198	15½
Manchester	189·2	253	225	4	274	5	232	42

Reduction in average time, both directions: Leicester 15 min.; Nottingham 14 min.; Derby 26 min.; Sheffield 15 min.; Manchester 35½ min.

British Road Services Vehicle Standardisation

British Road Services have now evolved a standard range of 11 main types of standard vehicles. As the outcome of the continuous study of traffic characteristics and operating requirements, it has been possible to determine a minimum range of standard vehicles which adequately cover the majority of needs in the general haulage and parcels fields, leaving a minority of miscellaneous types for special purposes. Annual replacement programmes based on this "family" of standard vehicles will ensure the continued development of a well-balanced fleet. The range of light vehicles for parcels and similar traffics consists of a 2-ton (actual) payload, 400-cu. ft. van wth 4-cyl. engine; a 3-ton (actual) payload, 600- or 700-cu. ft. van with 4-cyl. engine; a 5-ton (actual) payload, 600- or 700-cu. ft. van with 4-cyl. engine; a 5-ton (actual) payload, 700- or 800-cu. ft. van with 6-cyl. engine; and a tractor for 8-ton (actual) payload semi-trailer, with 6-cyl. engine. All these have diesel engines, and those with 4-cyl. engines have a licensing weight under 3 tons, permitting 30-m.p.h. operation under present legislation. Other types of body may be supplied, as required.

Medium and heavy types for general haulage consist of an 11-ton G.V.W., 7½-ton (actual) payload, platform body vehicle; a 14-ton G.V.W., 8½-ton (nominal) payload, 2-axle vehicle for trailer drawing; a 14-ton G.V.W., 9½-ton (nominal) payload, 2-axle vehicle, for solo operation; a 24-ton G.V.W., 17-ton (nominal) payload, 4-axle vehicle which may be equipped for trailer drawing; a tractor, for 10-ton (actual) payload, semi-trailer; and a tractor, for 16-ton (nominal) payload, semi-trailer. All these have diesel engines; except for the tractor for 10-ton payload semi-trailer, all vehicles of 14 tons G.V.W. and over have air-operated brakes.

It is common practice to rate vehicles in terms of their payload capacity, but B.R.S. rates are based on gross vehicle weight (G.V.W.). The actual payload which can be carried is then the G.V.W. less the "kerbside" weight of the empty vehicle, the latter being dependent, for example, on the type of body fitted. Thus the heavier the vehicle the less the payload for a given G.V.W.

The G.V.W. is determined by the manufacturer, according to the design of the vehicle and with due regard to the statutory limits laid down in "Construction and Use" regulations. It is for this reason that, in the descriptions given, certain payloads are shown as "nominal." Thus, within the 14-ton G.V.W. legal limit for 2-axle vehicles, the actual payload which can be carried may vary from less than 8 tons to more than 9 tons according to chassis and body type and therefore "kerbside" weight.

British Timken Limited

Continued expansion in all fields of engineering : Sir John Pascoe's address

Sir John Pascoe, Chairman & Managing Director of British Timken Limited, at the annual general meeting in Birmingham on June 6, said:

Our large capital expenditure over the past few years has meant a continuing increase in manufacturing facilities more particularly for the larger type of bearings and has enabled us to achieve a steadily rising turnover with greater profits. Although our capital commitments of £1,200,000 at the end of last year may be within our financial capacity, looking ahead, your Board sees not only the opportunity, but the necessity for further capital expenditure, which it has every reason to believe will be profitable.

The time will arise when we must consider raising further capital, and your Board is now considering an early approach to the Capital Issues Committee. As to the form of new capital, your Board has reached no definite conclusion, but is inclined to the view that in present circumstances a redeemable note issue would be cheapest and most satisfactory.

Orders and Output

During 1956, deliveries to the motor vehicle industry, except to the heavy commercial vehicle industry, fell severely, but demand from other industries, particularly for the heavier types of bearings, was such that we achieved the highest turnover in our history.

Railway bearings orders were received from 22 countries. Substantial orders were received from British Railways for our new wagon bearing units. Sales to the aircraft industry were well maintained, delivery of bearings for helicopters, being doubled.

Our South African company continues to play a most important part in our export drive.

Raw Material

Difficulties of obtaining adequate supplies of the high-grade nickel steel became even greater in 1956, these being accentuated by our increasing turnover, this undoubtedly affected our efficiency and reduced our possible output.

We use nickel alloy steels, evolved after many years of research, and we would not willingly supply tapered roller bearings made with steel to any other analysis. Supplies of nickel to the steelmakers are at present inadequate.

We now have four fully mechanised automatic lines in three-shift production and your Board is considering further development in this direction.

Efforts of our Sales Engineers resulted in many more sales to other industries than the vehicle industry, and there is a definite broadening of the basis of our operations.

Free Trade Area

We are confident that great opportunities lie ahead of us. We welcome the suggestion that this country should enter the European Free Trade Area, and we look forward to accepting the challenge that this will mean to British industry.

No thought of the future would be complete without reference to the ever-increasing costs of production. The "inflationary setting" appears to be with us without any definite indication at present that either the Government or Industry are prepared to pay the necessary price to alter this state of affairs.

With rising costs, to maintain its productive capacity, industry must be able to set aside year after year, additional sums for replacement; in other words, increasing costs of manufacture necessitate for healthy industry, increasing profits.

The real problem before industry in this country is to increase productivity.

Our main subsidiary, Fischer Bearings Co. Ltd., had a satisfactory year with an appreciably higher turnover than in 1955, a feature being the substantially higher sales of bearings which were being supplied to the aircraft and associated industries.

Workers and Staff

We have in our organisation many long-service staff. Their accumulated experience and know-how form one of our most important assets. To all our staff we tender our thanks for their loyalty.

I.R.S.E. Summer Convention in Switzerland

Visits to signalling installations and manufacturing plant

The annual summer convention of the Institution of Railway Signal Engineers was, by the courtesy of the several authorities concerned, held at Berne from May 23 to 26. The party, numbering about 180 members and ladies left London on May 22 under the leadership of the President, Mr. A. W. Woodbridge, who was supported by Mr. J. F. H. Tyler and Mr. D. G. Shipp, Vice-Presidents; Messrs. T. Austin, R. Dell, J. H. Fraser, E. G. Brentnall, S. Williams, J. C. Kubale and T. S. Lascelles, Past Presidents; a number of Members of Council; Mr. G. J. Dickin, Hon. General Secretary; Mr. B. Reynolds, Hon. Treasurer, and Mr. V. H. Smith, Hon. Secretary, General Purposes Committee, responsible for making the arrangements.

On arrival in Berne on May 23 they were welcomed officially by Mr. O. Wichser, a General Manager of the Swiss Federal Railways, accompanied by Mr. J. Germann, Public Relations Officer, who acted as translator throughout the convention.

Mr. Wichser expressed the great pleasure felt by his management at receiving the Institution and congratulated it on the remarkable work carried out by it, rendering it unique among technical bodies connected with railway engineering and operation. He emphasized the problems confronting the railway administrations today and the ways in which signal engineering was assisting them to keep abreast of ever more exacting requirements.

Centralised Traffic Control

In Switzerland, he said, they were doing their best to apply the most advanced types of equipment and bring their railways to the highest level of efficiency. CTC was to be installed on a section of single line where there was considerable freight traffic, while the number of power interlocking installations, already large, was continually being increased.

After Mr. Woodbridge had replied to this greeting, members heard a most informative lecture by Mr. H. P. O. Marthaler, Chief Signal Engineer, Federal Railways, illustrated by lantern slides.

Mr. Marthaler traced the development of signalling on the Swiss lines from last century and gave particulars of the various forms of apparatus in service, some as much as 60 years old, and the signal aspects used in both mechanical and colour-light signalling. Details of the different designs of power interlocking apparatus, including the latest "panel" type, to be inspected by the visitors, also were given.

The whole party was entertained to lunch by the Berner-Alpenbahn-Gesellschaft, which operates the Berne-Lötschberg-Simplon and other routes and which was represented, in the absence through indisposition of Mr. Von Fellenberg, Chief Engineer, by his Chief Assistant, Mr. T. Isler.

Relay Interlocking Installations

Members then travelled by special railcars to Lyss to inspect the route relay interlocking installations (see our issue of July 20, 1956) where engineering assistants demonstrated the working, afterwards proceeding to see other installations at Holligen and Weissenbühl, close to Berne, referred to in our issue of May 17, 1947. The last-named station is on the Gürbetal-Berne-Schwarzenburg line and deals with a heavy business traffic. Here Mr. Isler gave explanations of the working and the character of the traffic handled by a relatively small layout, with single line block sections on each side.

On May 24 visitors travelled by special train over the Federal Railways to Arth-Goldau and thence over the South Eastern Railway to Wädenswil, being greeted officially by the General Manager of the SER, Dr. O. Zuber, and issued with a general description of the railway, the signalling on which was described in our issue of July 24, 1953.

At Wädenswil steamer was taken to Zurich where lunch was offered by Integra A.G., Wallisellen. The President of the company, Dr. Karl Oehler, accompanied by Mr. H. Studer, Managing Director, and Mr. E. Vogt, Chief Engineer, and other officials welcomed the guests and gave a short address outlining the development of the signalling industry in Switzerland and particularly the technical advances made of recent years. At the conclusion he offered to Mr. Woodbridge, President of the Institution, an inscribed Swiss wine jug, as a souvenir of the occasion.

Inspection of Integra Plant

The party then proceeded to Wallisellen and were conducted by engineers round the establishment where demonstrations of ATC, the assembly and testing of power frames and panels, the working of relay interlocking block and axle counting mechanism and of a magnetic detectoscope, for examining the condition of wire ropes and cables, were seen; also the manufacture of colour-light signals and other equipment.

On May 25 the party was conveyed, again by special train on which refreshments were provided, over the Gotthard route. It had been intended to visit Ritom

power station but time did not permit; members, however, heard a short address describing its leading features and explaining the power distribution system connected to it. This was given at Ambri-Piotta station, whence the party travelled back to Göschenen, where lunch was offered by the Federal Railways. Mr. M. Portmann, Chief Civil Engineer, spoke of the 75th anniversary of the Gotthard line, and Mr. Marthaler described the signalling installation, which was inspected. The working of the remote control of the intermediate crossovers and signals in the tunnel and of the axle counting in service there and on the approach lines was demonstrated. This installation was the subject of an article in our issue of February 6, 1948.

Informal Dinner

In the evening the Institution informal dinner was held in Berne, with the President, Mr. Woodbridge, in the chair. Among the principal guests were Dr. H. Gschwind, President of the Federal Railways and Messrs. Wichser, Portmann, Isler, and Marthaler, who were accompanied by Divisional Signal Engineers and other technical colleagues.

Mr. Woodbridge offered to the management of the SFR through Dr. Gschwind, and also to the authorities of the private railways concerned through their representatives, the cordial thanks of the members and their ladies for the facilities granted and the generous entertainment received. He concluded by proposing the toast, coupled with the name of Dr. Gschwind, of prosperity to the Swiss Confederation.

Dr. H. Gschwind said how honoured they felt in receiving a visit from the Institution. Like those of Great Britain, which had rendered such a service to the world in developing railed transport, the Swiss railways had their difficulties and problems and were modernizing their equipment and operating methods. They were feeling the impulse of a new spirit of confidence in the future of the railways, happily now in the ascendant. Competition had had an adverse effect on their outlook at one time, but now they looked forward confidently to better times. To attain them, however, it was essential to pool all the resources of knowledge and experience available in the railway world and in this task the Institution had a great part to play.

Mr. J. F. H. Tyler, Senior Vice-President, proposed a cordial vote of thanks to the Institution officers, especially to Mr. Reynolds and Mr. Smith, who had so efficiently organized the details of the convention from its side and contributed so greatly to its success.

On May 26, an excursion was made via Interlaken and Grindelwald to the Jungfrau. The party returned to London the same evening.

DAY EXCURSIONS TO PARIS FROM MIDLANDS.—Day excursion trips are planned by British Railways, London Midland Region, from Birmingham, Coventry, Northampton, Leicester, Kettering, Mansfield, Derby, and Nottingham, to Paris. Excursionists will travel to London and make connections with Southern Region Continental boat trains from Victoria. The first excursion, on June 29, will give passengers a chance to see the Grand Prix race. Fares are slightly lower for this trip as the travel from Victoria will be by special train. Excursions on July 30 and August 8 are to Paris, travelling by the ordinary services via London/Newhaven/Dieppe.

Staff and Labour Matters

B.R.S. Working Day

British Road Services have reached agreement with the trade unions concerned on measures designed to take advantage of new regulations now in force which increase the permissible speed of heavier goods vehicles from 20 to 30 m.p.h.

The effect of the increase will be to enable the work content of the present working day of drivers and mates to be carried out in fewer hours with a better utilisation of vehicles. The basis of the agreement now reached is that in general the working day will be reduced by 1 hr., with a maximum working day of 10 hr., but without loss of earnings or present work content. To meet the changed conditions there will be a bonus payment of 15 per cent added to basic rates.

It has been agreed that duty schedules shall be adjusted, within a normal maximum of 10 hr., to take advantage of the higher average speed now permissible. Wherever possible, regular long-distance work will be scheduled on a change-over basis to enable as many men as possible to return to their home base at the end of the day's work instead of having to spend rest periods away from home. During the period schedules are being reviewed the opportunity will be taken to iron out local anomalies and divergencies from standard practice that have developed.

The revision of duty schedules will take some time to complete because schedules will have to be discussed with the representatives of the staff at the appropriate level. When these schedules have been agreed a common date for the operation of both the new duty schedules and the bonus payment will be decided.

The foregoing arrangements will apply to all vehicles of more than 5-ton carrying capacity. To bring the smaller categories of vehicle into line the work content will be examined in joint consultation and related to what can be carried out within 10 hr. A bonus payment, similar to that for heavy vehicles, will be made on the work being performed within the new hours determined, which will be 10 hr. or less.

The trade unions have promised full co-operation, through the joint consultative machinery which exists in B.R.S., in effecting the necessary changes.

Parliamentary Notes

Railways in East Africa

In a debate on May 31 in the House of Commons on the findings of the Royal Commission on Land and Population in East Africa, Mr. James Johnson (Rugby—Lab.) said he was glad to state that the recent City loan for E.A.R. & H. was over-subscribed. Sir Arthur Kirby had asked for £8½ million, and got it easily.

The High Commissioner services, he added, were doing a first-class job, and railway passenger and tonnage figures could be quoted. "Where do we wish to have development by the High Commissioner transport services?" he asked. "I submit we have need of them for Western Uganda to the fabulous Mountains of the Moon. There are far too few mining areas in East Africa. Even more important is the fact that we need a North-South backbone, an artery going from East Africa down to the Federation, particularly in north and south Tanganyika. A main railway is needed there, and a main road paved for all-weather purposes and up to first-class standards. It is important that we should open up south Tanganyika." About £20 million, he went on, might be needed to take the line to the coal fields at Songea in the west, not only as a means of opening up the coal fields, but for the whole of the East Coast to the Lakes, to Nyasaland and into the heart of the continent. It was very important that they should take a chance, and spend some money in building that line in south Tanganyika. If they did not do that other people would come in. For long the Germans had looked at Tanganyika, which they controlled at one time. Canadian and American money was about, and one could see that other nations would come into that part of the world if Britain did not do more than it was doing now. Obviously, East Africa needed money from the outside. It could get it from the City of London. It had had some; it must get more.

Railway Surveys

In a discussion about advance information about projects by the Electricity Authority in the debate in the House of Lords on May 30, Lord Chorley said that there was far too much secrecy about these matters. "I think," he said, "it goes back to the old days when the railways were first being projected and when landowners were hostile, and often also anxious to secure more than adequate compensation. It is known that the surveyors of the railway companies often had to go on to the land on Sunday mornings, when landowners were at church, in order to discover what was the best route for the projected railway. Unfortunately, that kind of atmosphere has persisted, and it certainly has been the experience of the amenities societies that it has not been until decisions had more or less been taken about running lines across that they were informed."

Questions in Parliament

Alexandra Palace Branch

Mr. E. Fletcher (Islington E.—Lab.) asked the Minister of Transport & Civil Aviation on May 29 if he would now state when the proposed electrification of the line through Finsbury Park to Alexandra Palace would be completed.

Mr. G. R. H. Nugent, Joint Parliamentary Secretary: This line has been closed to passenger traffic since 1954, and there is no proposal for electrifying it.

Mr. Fletcher: Some scheme is urgently necessary to deal with the increasing traffic congestion in North London.

Mr. Nugent: That is a little wide of this point. The answer to the question is that the line has been closed for some time, and that there is no such proposal. There is a proposal to electrify the main line up to Alexandra Park, not Alexandra Palace, and that is in the B.T.C. programme for 1962.

Letter Card Machines at Stations

Mr. Hector Hughes (Aberdeen N.—Lab.) asked the Postmaster-General on May 22 if he had yet decided to place in the principal railway stations automatic slot machines for the sale of letter cards similar to the slot machines now available for the sale of stamps.

Mr. K. Thompson, Assistant Postmaster-General: Letter card machines are on trial in a number of places. Among these are certain railway stations. The provision of more machines is under consideration.

Contracts and Tenders

Main-line diesel locomotives for British Railways

The British Transport Commission has placed contracts for 46 diesel main-line locomotives in connection with the British Railways modernisation plan, as follows:—

North British Locomotive Co. Ltd., Springburn, Glasgow: 28 diesel-electric main-line locomotives type B (1,000-1,250 h.p.), for fixed traffic working in the Eastern Region

Birmingham Railway Carriage & Wagon Co. Ltd., Smethwick, 40, Staffs: 18 diesel-electric main-line locomotives, type B (1,000-1,250 h.p.), for mixed traffic working in the Scottish Region

Metropolitan-Cammell Carriage & Wagon Co. Ltd., Birmingham, 8: 300, 20-ton bulk cement wagons, and 400, 30-ton bogie bolster wagons

Charles Roberts & Co. Ltd., Horbury Junction, Wakefield: 1,200, 12-ton covered goods vans, and 100, 20-ton bulk grain vans

Butterley Co. Ltd., Codnor Park, Nr. Nottingham: 21, 38-ton rectank wagons

Pressed Steel Co. Ltd., Cowley, Oxford: 75, gangwayed standard brake vans, to be manufactured at Linwood, Paisley.

Contracts have been placed by the Argentine National Transport Undertaking (E.N.T.) for 20 4-ft. 8½-in. gauge, 85-ton, 1,320-h.p. diesel-electric, universal type locomotives for the General Urquiza Railway, with the General Electric Company, U.S.A., at a cost of $3,500,000, and for 130 5-ft. 6-in. gauge 1,800-h.p. diesel electric locomotives, with General Electric Company electrical equipment, with Alco Products Inc., U.S.A., at a cost of $30,851,500, 80 per cent of which will be financed by the Eximbank and the remainder by the manufacturers.

The British Transport Commission, South Wales Docks, have placed the following contracts:—

Brush Electrical Engineering Co. Ltd.: supply and delivery of 6·6-kV. and 415-V. switchgear and transformer, Swansea Docks

Marshall Sons & Co. Ltd.: supply and delivery of one 6/8-ton diesel road roller, Swansea Docks

Land & Marine Contractors Limited: construction of timber dolphin, entrance channel, Port Talbot

Kendrick & Mole Limited: supply of 40 lengths of short link dredger mooring chain with 40 cable joining shackles, South Wales Docks

General Engineering (Swansea) Limited: repairs to *s.h.b. Foremost VII*, Swansea Docks.

British Railways, Eastern Region, have placed the following contracts:—

Enfield Cables Limited, London, W.C.1: supply, delivery, and installation of copper-cored medium voltage cables at Wath Marshalling Yard

B.K.S. Air Survey Limited, Leatherhead, Surrey: aerial survey between 5¾ mile post north of Bowes Park Station and 27½ mile post south of Langley Junction and between 32 m. 30 c. north of Hitchin Station and 53 m. 30 c. near Shepreth Branch Junction south of Cambridge Station, and from 53 mile post north of Colchester Station through Ipswich to Felixstowe and from Manningtree to Harwich

Samuel Hodge & Sons Ltd., Rainham, Essex: repairs to 38 hydraulic capstans

Hypower Limited, Southwark, London, S.E.1: repairs to 19 hydraulic capstans

Clugston Cawood Limited, Scunthorpe, Lincs: construction of B.R.C. crate wall to protect north bank of River Don at Mexborough Locomotive Depot

May, Gurney & Co. Ltd., Trowse, Norwich: surface dressing of roadways in the Stratford, Kings Cross, Cambridge, and Ipswich districts.

British Railways, North Eastern Region, have placed the following contracts:—

R. Jenkins Limited, Rotherham: four fuel tanks and one steel gantry, Botanic Gardens, Hull

Fielding & Platt Limited, Gloucester: one straightening press, Dinsdale Depot.

Shelvoke & Drewery Limited, Letchworth: one heavy duty fork-lifting truck

G. Brady & Co. Ltd., Manchester: supply and fixing of three pairs of entrance gates, Newcastle Forth Goods Station

Wharton Crane & Hoist Co. Ltd., Stockport: two 20-ton electric travelling cranes, York Carriage Works

Cawood, Wharton & Co. Ltd., Harrogate: crane gantry concrete foundations, Dinsdale.

The Special Register Information Service, Export Services Branch, Board of Trade, has received a call from India for superheater tubes as follows:—

5 steel flue tubes, 12 ft. 6 in. × 5¼ in. O.D. × 8 S.W.G. to I.R.S. specn. R-23/51

31 steel flue tubes, 15 ft. 3 in. × 5¼ in. O.D. × 8 S.W.G. to I.R.S. specn. R-23/51

13 steel flue tubes, 8 ft. 6 in. long, swelled at one end to $5\frac{7}{16}$ O.D. for 4⅛ in. up, other end reduced to 4½ in. O.D. × 10¾ in. up, to I.R.S. specn. No. R-23/51

8 steel flue tubes, 13 ft. 4 in. × 5¼ in. × 8 S.W.G. for ES class engines and to I.R.S. specn. No. R-23/51

150 superheater flues, 11 ft. 8 in. × 5¼ in. × 8 S.W.G. steel, for FS end VS boilers to ex M. & S.M. Rly. drg. No. LB. 51 (D.G.I. & S. No. 541/4) and to I.R.S. specn. No. 23/51

100 superheater flues, 13 ft. 4 in. × 5¼ in. × 8 S.W.G., for DS boilers to ex. M. & S.M. Rly. drg. No. LB. 51 (D.G.I. & S., No. 541/4) and to I.R.S. specn. No. R-23/51

65 superheater flues, 16 ft. 2 in. × 5¼ in. × 8 S.W.G., for A.S. boilers to ex. M. & S.M. Rly. drg. No. LB. 51 (D.G.I. & S. No. 541/4) and to I.R.S. specn. R-23/51

246 superheater flues, 18 ft. 10¼ in. × 5¼ in. × 8 S.W.G. steel, for XB & XD class boilers, to ex. M. & S.M. Rly. drg. No. LB. 51 (D.G.I. & S. No. 541/4) and to I.R.S. specn. R-23/51

6 superheater flues, 20 ft. 7¼ in. × 5¼ in. × 8 S.W.G. steel, for HS class to ex. M. & S.M. Rly. drg. No. LB. 51 (D.G.I. & S. No. 541/4) and to I.R.S. specn. R-23/51

102 superheater flue tubes, 12 ft. 0 in. × 5¼ in. × 8 S.W.G. steel, for MS & MHS class locos. to ex. M. & S.M. Rly. drg. No. M/LB. 51 (D.G.I. & S. No. 542/3) and to I.R.S. specn. No. R-23/51

47 superheater flue tubes, 11 ft. ¾ in. × 5 in. × 8 S.W.G. steel, for G/S class locos. to ex. M. & S.M. Rly. drg. No. M/LB. 51 (D.G.I. & S. No. 542/3) and to I.R.S. specn. R-23/51

116 superheater flue tubes, 15 ft. 9 in. × 5¼ in. × 8 S.W.G. steel, YC & YD class locos. to ex. M. & S.M. Rly. drg. No. M/LB. 51 (D.G.I. & S. No. 542/3) and to I.R.S. specn. R-23/51

10 superheater flue tubes, 9 ft. 2¾ in. × 5¼ in. × 8 S.W.G. steel, for YK class to ex. M. & S.M. Rly. drg. No. M/LB. 51 (D.G.I. & S. No. 542/3) and to I.R.S.S.R.-23/51

531 flue tubes, 5¼ in. OSD. × 8 S.W.G. × 12 ft. long, for SG, B, M, MT, PT/C, YF, YK, T & K super classes of locos, to I.R.S. specn. R-23/51

280 flue tubes, 5¼ in. OSD. × 8 S.W.G. × 13 ft. 2 in. long, for YG and YP class locos. to I.R.S. specn. R-23/51

219 flue tubes, 5¼ in. OSD. × 8 S.W.G. × 16 ft. 2 in. long, to I.R.S. specn. R-23/51, for SP class locos.

303 steel flue tubes for AWC class, 5⅛ in. OSD × 8 S.W.G. × 13 ft. 9in. long, swelled to $5\frac{7}{16}$ in. O.D. for a length of 4 in. at one end and reduced to 4½ in. O.D. for a length of 5 in. at the other end tapering from the larger to the smaller dia. for a length of 3 in. to I.R.S.S.R.-23/51.

The issuing authority is the Director-General of Supplies and Disposals, Shahjahan Road, New Delhi. The closing date is June 19, 1957. The tender No. is P/SW2/19619-G/IV. A set of tender documents is available for loan to United Kingdom firms on application to the Branch (Lacon House, Theobalds Road, W.C.1.). The reference ESB/13774/57 should be quoted in any correspondence with the Branch.

The Special Register Information Service, Export Services Branch, Board of Trade, has received a call from India for axleboxes, as follows:—

150 axleboxes with keeps only for coupled wheels of XB and XD locos. to drg. Nos. MSM. SK. No. 1533/BG and 1536/BG (D.G.S. & D. Nos. 13574, 13575) and I.R.S. specification No. R-32/54 clause 53.

The issuing authority in the Director General of Supplies and Disposals. The tender No. is P/SRI/16070-H/I. Bids should be sent to the Director General of Supplies and Disposals, Shahjahan Road, New Delhi. The closing date is June 21, 1957. A set of tender documents, but not drawings or specifications, is available for loan to United Kingdom firms on application to the Branch (Lacon House, Theobalds Road, W.C.1.). A photo-copy set can be purchased from the Branch for 13s. Cheques and postal orders should be made payable to the Principal Accountant, Board of Trade. Firms wishing to collect photo-copy sets of tender documents are advised to notify the Branch in advance of their requirements.

The reference ESB/13748/57 should be quoted in any correspondence with the Branch.

The Special Register Information Service, Export Services Branch, Board of Trade, has received a call from India for loco-

motive steam injectors, as follows:—

61 injectors complete, minor assembly

12 m/m., simplex reversible type.

The issuing authority is the Director of Supplies and Disposals. The tender No. is P/SW-2/18051-H/II. Bids should be sent to the Director General of Supplies and Disposals, Shahjahan Road, New Delhi. The closing date is June 25, 1957. A set of tender documents is available for loan to United Kingdom firms on application to the Branch (Lacon House, Theobalds Road, W.C.1.). The reference number ESB/14157/57 should be quoted in any correspondence with the Branch.

Notes and News

The Mexican Central Railway Securities Co. Ltd.—No further sales of the National Railways of Mexico bonds were made during the year ended January 31, 1957, nor have the directors received any notification of any bids for these bonds. The bonds held by the Trustee's bankers remain at the same totals as at the close of the previous year.

St. Christopher's (Railway Orphanage), Derby.—The annual meeting and distribution of prizes will take place at St. Christopher's, Derby, on June 21 at 2.30 and 3.15 p.m. respectively. The Chairman, Mr. Clive E. Bemrose, will preside, and prizes will be distributed by Mr. K. W. C. Grand, General Manager, Western Region, and Mrs. Grand. The reunion of old pupils will be held on July 6, commencing at 2 p.m.

Sir Brian Robertson's Visit to Scottish Region.—The accompanying illustrations show Sir Brian Robertson, Chairman of the British Transport Commission, on his recent tour of the Scottish Region, where he visited inter alia the Scottish Region Pre-Apprentice Training School at Glasgow, Cowlairs Signalbox (described in our May 24 issue), and Thornton Marshalling Yard. In the left-hand picture he is seen at the Pre-Apprentice Training School, with (left to right) Mr. G. W. Stewart, Assistant General Manager; Sir Ian Bolton, Chairman of the Scottish Area Board; an apprentice trainee brass finisher; and Mr. J. Snodgrass, Chief Instructor. The right-hand illustration shows him in the control tower at Thornton Marshalling Yard with (centre) Mr. F. Batty, District Operating Superintendent, Burntisland; and Mr. F. C. Margetts, Chief Operating Superintendent, Scottish Region.

Blackman Export Co. Ltd. Change of Address.—The Blackman Export Co. Ltd., a subsidiary of Keith Blackman Limited, manufacturers of fans, ancillary equipment, and industrial gas apparatus, has moved its office from 23, Queen Square, London, W.C.1, to the parent company's head office at Mill Mead Road, London, N.17. At the same time Keith Blackman Limited has opened a London Area sales office at the Queen Square address vacated by the Blackman Export Co. Ltd.

T.U.C. Views on "Wages Court."—Speaking at the Conference of the Amalgamated Union of Building Trade Workers at Weymouth on June 5, Sir Thomas Williamson, Chairman of the Trades Union Congress, stated: "If we must have some sort of court to advise the Government to keep down the rise in prices, I think I can give the assurance that in this trade union movement we will play the game." With Sir Vincent Tewson, General Secretary of the T.U.C., he was to see the Chancellor of the Exchequer on proposals for a "wages court" on the following day.

B.T.C. Film for Berlin Festival.—The British Transport Commission's new film "The England of Elizabeth" has been chosen as one of the British entries for the Berlin Film Festival, which will take place from June 21 to July 2. The film features buildings, art treasures, costumes, and customs of the first Elizabethan era which can still be seen today by tourists and holidaymakers in Britain. It was made under the general supervision of Mr. Edgar Anstey, Films Officer of the B.T.C., and was directed by Mr. John Taylor and produced by Mr. Ian Ferguson. The commentary is spoken by Mr. Alec Clunes. The music was specially composed by Dr. Ralph Vaughan Williams. Mr. A. L. Rowse, the historian, advised on the treatment. The film, which is in Eastman colour, has recently completed six weeks' run at the Leicester Square Theatre, London.

C. A. Parsons & Co. Ltd.—Sir Claude Gibb, chairman of C. A. Parsons & Co. Ltd., has advised shareholders that the increase in ordinary capital from £3,600,000 to £9,000,000 by scrip and rights issues was necessary despite the large sums ploughed back and despite a very conservative dividend policy. Profits had been so reduced by taxation that there had been insufficient left to finance the extensive retooling necessary and for some measure of expansion. Some of the new money was to help finance the construction of a £6,000,000 graphite producing factory at Newburn Haugh on the River Tyne. To meet the demand for reactor quality graphite needed for the British nuclear power programme, the company, in association with friends and associates, had made an arrangement with the Great Lakes Carbon Corporation of New York. The experience of this company will be available to the new British company, Anglo Great Lakes.

Cammell Laird & Co. Ltd. Report.—In his statement, circulated with the report and accounts of Cammell Laird & Co. Ltd. for the year 1956, Mr. J. C. Mather, the Chairman, states that despite difficulties besetting the industry the accounts reveal satisfactory results for the year. Dealing with the Metropolitan-Cammell Carriage & Wagon Co. Ltd., an associated company, Mr. Mather points out that $4,500,000 were earned last year in respect of shipments of wagons to India under a U.S.A. dollar-aid contract. Against other export

Sir Brian Robertson at the Pre-Apprentice Training School

In the control tower at Thornton Marshalling Yard

orders the Company despatched more than 100 coaches for electric suburban service in Rio de Janeiro, and large numbers of wagons for Rhodesia, Malaya, Nigeria, Burma, and Portuguese West Africa. More than 100 diesel railcars were built for British Railways, to which large numbers of standard steel coaches and wagons were also delivered. Prototypes of first and second class coaches with modern interiors and improved passenger amenities for steam hauled stock were also completed. The value of output was greater than that of any previous year. At the end of the year the B.T.C. placed a contract with the company for the design and construction of three 8-car and two 6-car high-speed de luxe diesel trains for main line services. Important new export contracts received were for 2,300 wagons for New Zealand and 400 wagons for the Sudan. These were secured in the face of world-wide competition.

Baggage Racks in Cross-Channel Steamers.—During the height of the season considerable trouble is experienced in Southern Region cross-Channel steamers through congestion caused by baggage placed in gangways, although everything is done to persuade passengers to register their heavy baggage. Arrangements have been made for baggage racks to be placed in the *Invicta*, *Canterbury*, and *Côte d'Azur*, and they will also shortly be fitted in the *Maid of Orleans* and the *Isle of Thanet* on the Short Sea routes. Later, racks will be fitted in the Newhaven/Dieppe ships and in the vessels based on Southampton. A typical installation, in ss. *Invicta*, is shown in the accompanying illustration.

Baggage racks on "C" deck in ss. "Invicta"

British Railways Inter-Regional Timekeeping Competition.—At a ceremony in the Board Room at Euston Station on June 5 at which a cross-section of staff from various parts of the London Midland Region were present, Lord Rusholme, Chairman of the London Midland Area Board, thanked Mr. David Blee, General Manager of the Region, for the successful efforts made to improve the running of both passenger and freight trains during 1956. On display was the shield won by the London Midland Region in the inter-Regional competition for the greatest improvement in express passenger train timekeeping referred to on page 522 of our issue of May 3. This was the first occasion that this competition had been held. Among members of the staff present at the ceremony were Mr. L. W. Cox, Chief Operating Superintendent; Mr. S. T. Clayton, Motive Power Superintendent; Mr. S. Williams, Signal Engineer; Mr. J. F. Harrison, Chief Mechanical & Electrical Engineer; and Mr. A. N. Butland, Assistant Civil Engineer.

Manchester - Hayfield - Macclesfield Line Diesel Trains.—Lightweight diesel trains will begin to operate on the Manchester-Marple-Macclesfield and Hayfield lines as from June 17. Two-car units, seating 12 first and 104 second class passengers, will provide, in off peak hours, an hourly service of trains to and from London Road and Hayfield and to and from London Road and Marple. They will be supplemented by steam operated trains during business hours. The majority of the diesel trains will travel via Bredbury but some will be routed via Guide Bridge. The combination of these two services will give a half hourly service of trains in each direction between Manchester and Marple in off peak periods. Between Manchester London Road and Macclesfield, diesel trains will also operate, at the same times as at present but certain business trains will be steam operated.

Yale & Towne Factory Extension.—The opening ceremony of an extension to the Yale & Towne Manufacturing Company's Works at Wednesfield, Staffs., took place on June 6. The new extension covers some 27,600 sq. ft., which brings the total area of the works to some 144,500 sq. ft. The increased floor space will enable the company to expand its interest in the field of material handling by allowing a 100 per cent increase of production of its products, which include electric power-lift trucks, hand-lift trucks, and hoists. The first category consists of three classes, rider-controlled "Series 51" and "Warehouser," and pedestrian-controlled "Worksaver" fork lift trucks. The second covers most types of pallet or platform load from 1,000 lb. to 6,000 lb. The third includes hand-operated hoists up to 10 tons, with trolleys to suit all models, electric hoists up to 1-ton capacity, and "Pul-lifts" of up to 6 tons capacity for lifting and tensioning operations.

Turntable in Van for Side-Loading Motorcars

Side-loading at Paddington, Western Region, showing turntable in special van and lightweight ramps (*see editorial note on page* 674)

Central Argentine Railway Limited.—The report of the Liquidator of the Central Argentine Railway Limited, which is in voluntary liquidation, for the year ended April 1, states that the main interest of stockholders is now centred in the Catalinas Warehouses and Mole Co. Ltd. (in voluntary liquidation). The Liquidators of that company report that representatives in Buenos Ayres have made considerable progress in negotiations for the repeat of the decree which prevents the sale of the more valuable land in the North Section. The matter has now been passed to the Government authorities, from whom a favourable decision is expected in the near future. During the year, 10 of the outstanding lawsuits against the Central Argentine Railway Limited were satisfactorily concluded, claims for a total of some £4,000 being disposed of by the payment of less than £400.

Forthcoming Meetings

Open currently and until further notice.—British Transport Commission: Historical Exhibition "Transport Treasures" in Shareholders' Meeting Room, Euston Station, from 10 a.m. to 6 p.m. on weekdays, and 2 to 6 p.m. on Sundays. Admission 6d.

June 23 (*Sun.*).—Railway Correspondence & Travel Society. Yorkshire coast rail tour, starting from Leeds City Station at 10.15 a.m.

June 28 (*Fri.*) to June 30 (*Sun.*).—British Transport Commission, modern railway travel exhibition, at Battersea Wharf Goods Depot. Open Friday, June 28, 4 p.m. to 9 p.m., Saturday, June 29, 10 a.m. to 9 p.m., and Sunday, June 30, 2 p.m. to 9 p.m. Admission free.

July 2 (*Tue.*).—Railway Correspondence & Travel Society, Sheffield Branch, at the Livesey Clegg House, Union Street, Sheffield, at 7.30 p.m. Paper on "Swiss Railways," by Mr. D. Sutcliffe.

July 2 (*Tues.*).—Permanent Way Institution, Manchester & Liverpool Section. Additional meeting in the Ambulance Room, Nantwich Road, Crewe, at 7.15 p.m. Short talks and general discussion on permanent way maintenance. Mr. W. F. Beatty will preside.

July 6 (*Sat.*).—Railway Correspondence & Travel Society, East Midlands Branch. Denton Mines rail tour.

July 6 (*Sat.*).—Permanent Way Institution, London Section. Joint visit to Chesterton Junction Welding Depot, Eastern Region, with East Anglia Section member; visit for ladies to colleges in Cambridge.

July 6 (*Sat.*).—Railway Correspondence & Travel Society. Reseau Breton rail tour, leaving Waterloo at 6.35 p.m. on Friday, July 5.

Railway Stock Market

There has been no very definite trend in stock markets, though a renewed reaction in British Funds and an easier tendency in sterling tended to affect sentiment. Industrial shares showed individual features of strength, but there was a fair amount of selling by investors in order to finance the taking up of new shares offered on attractive terms in the Guest Keen and other issues.

Foreign Rails eased, where changed, owing to absence of demand. After their recent improvement there was profit-taking in Antofagasta, which, as compared with a week ago, came back from 37⅝ to 36½, while the preference stock lost 1½ to 45½. The 5 per cent (Bolivia) debentures changed hands up to 94½. Costa Rica ordinary stock became easier at 24, Dorada ordinary stock was quoted at 58½, Chilean Northern debentures at 43½, and Guayaquil & Quito assented bonds were 82. Paraguay Central prior debentures have marked 10. In other directions, International of Central America common shares were $43½ and the preferred stock $185.

Taltal Railway shares were 11s. 9d. and elsewhere, United of Havana income stock kept at 8⅛ and the consolidated stock was 2¼. San Paulo 3s. units held their improvement to 4s. 1½d. Mexican Central "A" bearer debentures changed hands around 68.

Earlier in the week Canadian Pacifics reflected the easier trend of Wall Street and changed hands around $70, which, however, compared with $69⅝ a week ago. The preference stock was again around £57 and the 4 per cent debentures eased slightly to £65½. White Pass shares were slightly over $23.

Among Indian stocks, Barsi was quoted at 18½. In other directions, Emu Bay irredeemable debentures were 38½.

Midland of Western Australia ordinary stock was 8½ and the 4½ per cent debentures 78½ xd.

Among shares of locomotive builders and engineers, activity continued in North British Locomotive, which, however, eased from 20s. 3d. to 19s. 6d., there being no confirmation of recent rumours of a deal. Westinghouse Brake shares were dealt in around 39s. 9d. British Timken were 61s. 9d. following the statement at the annual meeting that the company is considering approaching the C.I.C. for permission to raise fresh capital. Gloucester Wagon 10s. shares eased slightly to 13s. and Wagon Repairs 5s. shares were 14s. 1½d. Hurst Nelson remained around 36s., but Birmingham Wagon shares eased further from 17s. 10½d. to 17s. 3d., at which there is a generous yield of 11½ per cent on the basis of last year's 10 per cent dividend. Beyer Peacock 5s. shares attracted some attention and have strengthened from 10s. 1½d. to 11s. 1½d. Elsewhere, Charles Roberts 5s. shares moved up from 12s. 6d. to 12s. 10½d.

Ruston & Hornsby have remained firm at 33s. B.S.A. receded sharply from 32s. to 30s. 6d., but although half-yearly profits have not been published, the maintained 3 per cent interim dividend is regarded in the City as indicating that the internal rearrangements put into force by the chairman, Mr. John Sangster, are proving successful. T. W. Ward shares have been firm and were well maintained at 81s. 6d. and Vickers at 44s. were within 6d. of the price ruling a week ago. British Oxygen have been maintained at 34s. 9d. Guest Keen were 57s. on further consideration of the big rights issue to shareholders. General Electric at 56s. 9d. have been quite well maintained, also Associated Electrical at 65s. 9d. and English Electric at 59s. 9d. F. Perkins 10s. shares were 14s. 9d. compared with 15s. 3d. a week ago, and shares of the Dowty Group strengthened to 37s. 6d. John Thompson 5s. shares held steady at 34s. 9d. Mather & Platt changed hands around 63s. 9d. Shares of the Channel Tunnel Co. became less active and dropped back from 19s. 6d. to 17s. 9d.

OFFICIAL NOTICES

TRAFFIC FOREMAN required. Must have had practical experience in handling goods traffic and be familiar with British Railways demurrage schemes and rate schedules. Small terrace house available. Apply in writing with full details to The Renishaw Iron Co. Ltd., Renishaw, Near Sheffield.

ASSISTANT TO CHIEF DESIGNER. Applications are invited for this post from men between the ages of 25 and 35. Experience in Railway Carriage and Wagon design an advantage. This position is permanent and the successful applicant will be eligible for the Pension and Life Insurance Scheme. Salary in the range £650 to £750 per annum. Please send full details of age and experience to Personnel Manager, Lightalloys Ltd., St. Leonards Road, London, N.W.10.

A LEADING Electrical Manufacturing Company wishes to appoint to its staff a SENIOR DESIGN DRAUGHTSMAN for Control Gear design and layout work in a.c. and d.c. electric traction. A salary of £900 to £1,100 is offered for this key position in a rapidly expanding department. A house is available for the successful applicant. Interviews can be arranged locally at weekends. Please write in confidence to Box 366, *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

CORAS IOMPAIR EIREANN. Manager, Road Freight Department. Coras Iompair Eireann invites applications for the position of MANAGER of its Road Freight Department. Applicants should state age and give particulars of education, training and experience to the undersigned not later than 5th July, 1957. The terms and conditions of appointment will be sent to those whose qualifications are regarded as adequate.—M. J. Hayes, *Secretary*, Kingsbridge Station, Dublin. 14th June, 1957.

OVERSEAS Railway Equipment. OVERSEAS COMMERCIAL and TECHNICAL REPRESENTATIVE required by well established British Company engaged in supply of proprietary railway equipment. Considerable experience in rolling stock field essential, together with ability to survey British Commonwealth requirements both commercial and technical. This is a major executive position and applicants must have well established contact in this field and be prepared for extensive travelling overseas. —Replies to R.C.D., Hamill Toms Ltd., Regency House, Montpellier, Cheltenham.

THE NIGERIAN RAILWAY CORPORATION invites applications for the post of TECHNICAL INSTRUCTOR (ELECTRICAL). Salary scale: £1,150 by £50 to £1,350 p.a. plus £300 p.a. Overseas Pay. Qualifications: Candidates must have City and Guilds Final Certificate in Electrical Engineering Practice or full technological Certificate in Electrical Installation Work or O.N.C. in Electrical Engineering. Candidates should have served a recognised apprenticeship or had regular training, followed by at least five years of Industrial and/or Teaching experience. Knowledge of Diesel Traction would be an advantage. Tours: 15-month tours followed by 15 weeks' leave in U.K. on full pay. Allowances: In addition there are attractive allowances. Apply to: The London Representative, Nigerian Railway Corporation, 11, Manchester Square, London, W.1.

GENTLEMAN, 38, with 11 years' Railway Sales background with long-established company having excellent connections in Mechanical and Stores Departments, requires position of responsibility with company specialising in Railway business. Box 368, *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

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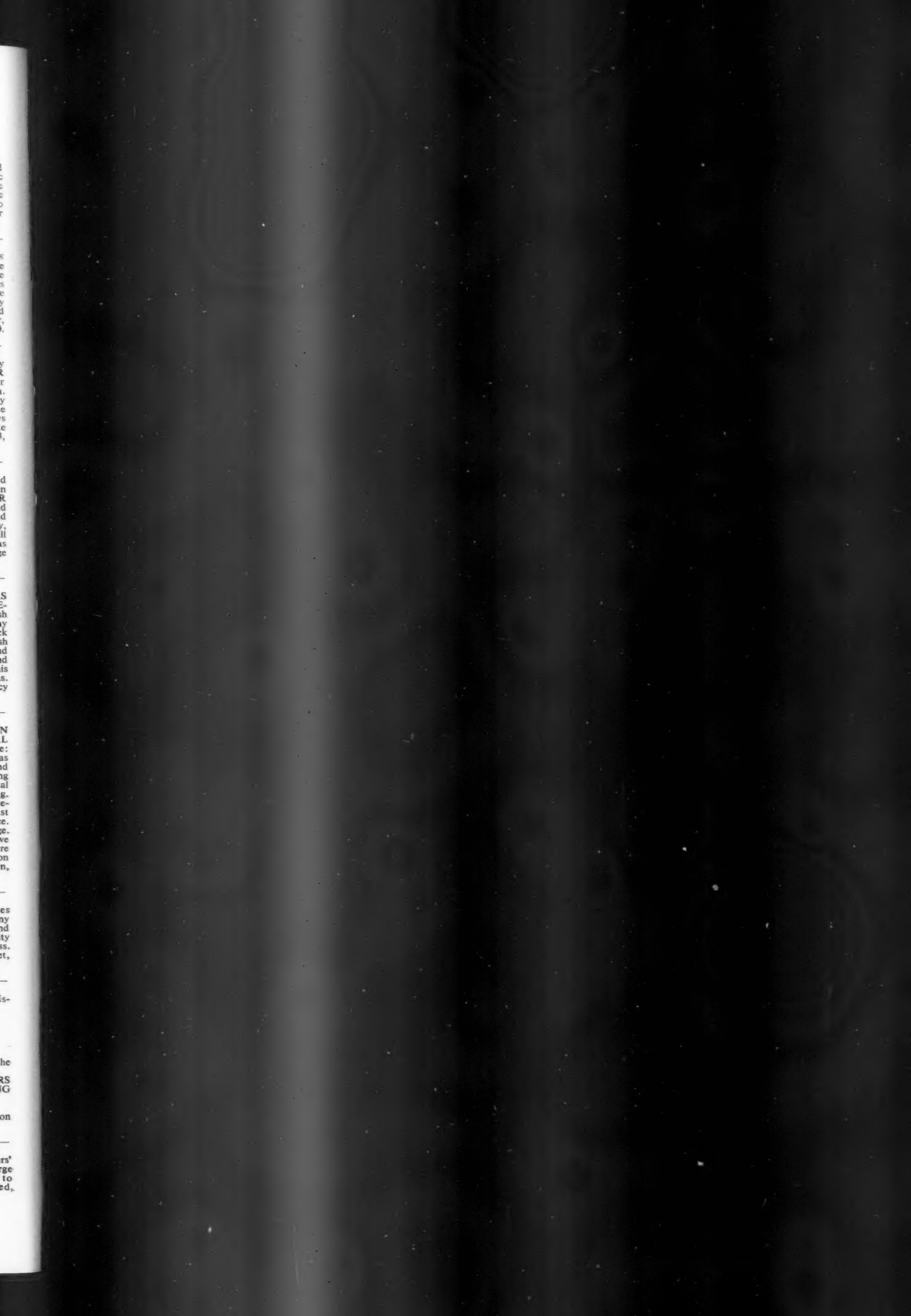
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